ORDER NO. AD9402035C8

Service Manual

COMPACT disc DIGITAL AUDIO

DIGITAL

MASH*
multi-stage noise shaping

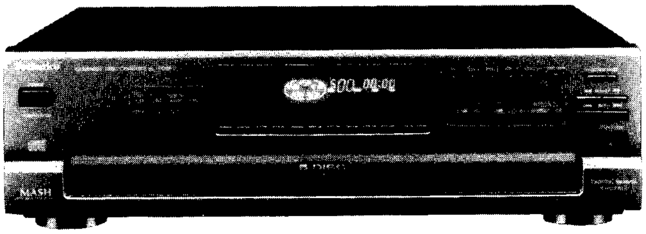
Compact Disc Changer
SL-PD667

Colour

(K) ... Black Type

Area

Suffix for Model No.	Area	Colour
(E)	Europe.	(K)
(EB)	Great Britain.	
(EG)	Germany and Italy.	
(GC)	Asia, Latin America, Middle Near east and Africa.	
(GN)	Oceania.	



※
- Technics (or Panasonic) developed the world's first MASH type DAC and ADC. MASH technology was invented by NTT (LSI Labs).
- MASH is a trademark of NTT.

RAE0113Z MECHANISM SERIES

■ SPECIFICATIONS

■ AUDIO

No. of channels	2 (left and right, stereo)
Frequency response	2–20,000 Hz, ±1 dB
Output voltage	2 V (at 0 dB)
Dynamic range	92 dB
S/N	100 dB
Total harmonic distortion	0.007 % (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
DA converter	MASH (1 bit)
Output impedance	Approx. 1 kΩ
Load impedance	More than 10 kΩ

■ PICKUP

Wavelength	780 nm

■ GENERAL

Power consumption	
For (E, EB, EG, GN) areas.:	12 W
For (GC) area.:	14 W
Power supply	
For (E, EB, EG, GN) areas.:	AC 50/60 Hz, 230–240 V
For (GC) area.:	AC 50/60 Hz, 110 V/127 V/220 V/240 V
Dimensions (W × H × D)	430 × 125 × 370 mm (16-15/16" × 4-15/16" × 14-9/16")
Weight	4.6 kg (10.1 lb.)

Note:

Disign and specifications are subject to change without notice.
Weight and dimensions are approximate.

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Technics

■ PRECAUTION OF LASER DIODE

CAUTION: This product utilizes a laser diode with the unit turned "on", invlsible laser radiation is emitted from the pickup lens.
Wave length: 780nm
Maximum output radiation power from pickup: 100µW/VDE

Laser radiation from the pickup lens is safety level, but be sure the followings:

1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

ACHTUNG: Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.

Wellenlänge: 780nm
Maximale Strahlungsleistung der Lasereinheit: 100µW/VDE

Die Strahlung an der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

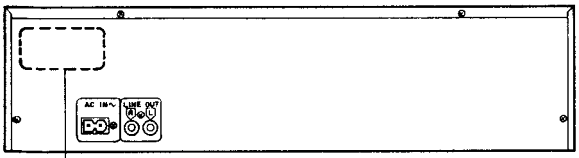
1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinhit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlines blicken.
4. Nicht über längere Zeit in die Fokussierlinse blicken.

ADVARSEL: **I dette a apparat anvendes laser.**

• Use of caution labels

Note: ○ Mark is used, × Mark is not used.

Areas	SQWD7	RQLS0021	RQLS0078
(E)	○	○	○
(EB)	○	○	×
(EG)	○	○	×
(GC)	○	○	×
(GN)	○	○	×



SQWD7

CLASS 1
LASER PRODUCT
SQWD7

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

RQLS0078

VARO! Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymätön lasersäteilylle.
Älä katso säteesen.

VARNING! Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

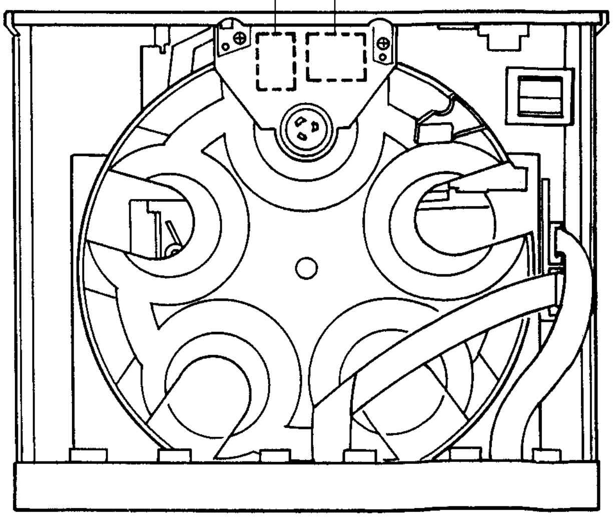
ADVERSEL! Usynlig laserstråling når deksel åpnes og sikkerhedslås brytes. Unngå eksponering for strålen.
RQLS0078

RQLS0021

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

VORSICHT-Unsichtbare Laserstrahlung, wenn Abdeckung geöffnet. Nicht dem Strahl aussetzen.
RQLS0021

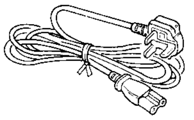
DANGER-Invisible laser radiation when open.
AVOID DIRECT EXPOSURE TO BEAM.



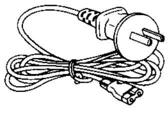
■ ACCESSORIES

AC power supply cord .... 1 pc.

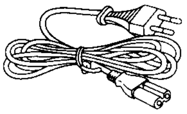
[VJA0733 (EB)]



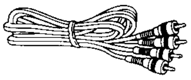
[RJA0036-K (GN)]



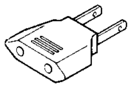
[RJA0019-2K (E, EG, GC)]



Stereo connection cable .... 1 pc.
[SJP2249-3]



Power plug adaptor .... 1 pc.
[SJP5213-1 (GC)]

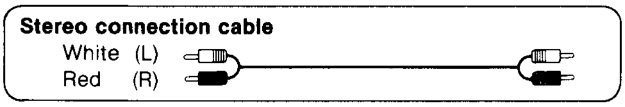


■ CONNECTIONS

Before connecting the changer to your audio system, make sure that the power of the changer and all other system components is turned off.

- Although the figure below shows the AC power supply cord being connected to a household AC outlet, if the amplifier (or receiver) is equipped with an AC outlet, connect the cord to that outlet.
- The configuration of the AC outlet differs according to area.

Stereo connection cable


White (L)
Red (R)

[For (EB) area only]

BE SURE TO READ THE CAUTION FOR AC POWER SUPPLY CORD ON PAGE 3 BEFORE THE FOLLOWING CONNECTIONS.

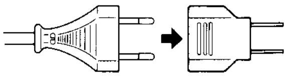
[For (GC) area only]

Set the voltage selector to the voltage setting for the area in which the unit will be used.
[Use a minus (−) screwdriver]

Note

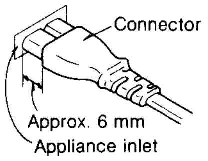
If the power supply in your area is 117 V or 120 V, set to the "127 V" position.
Note that this unit will be seriously damaged if this setting is not made correctly.

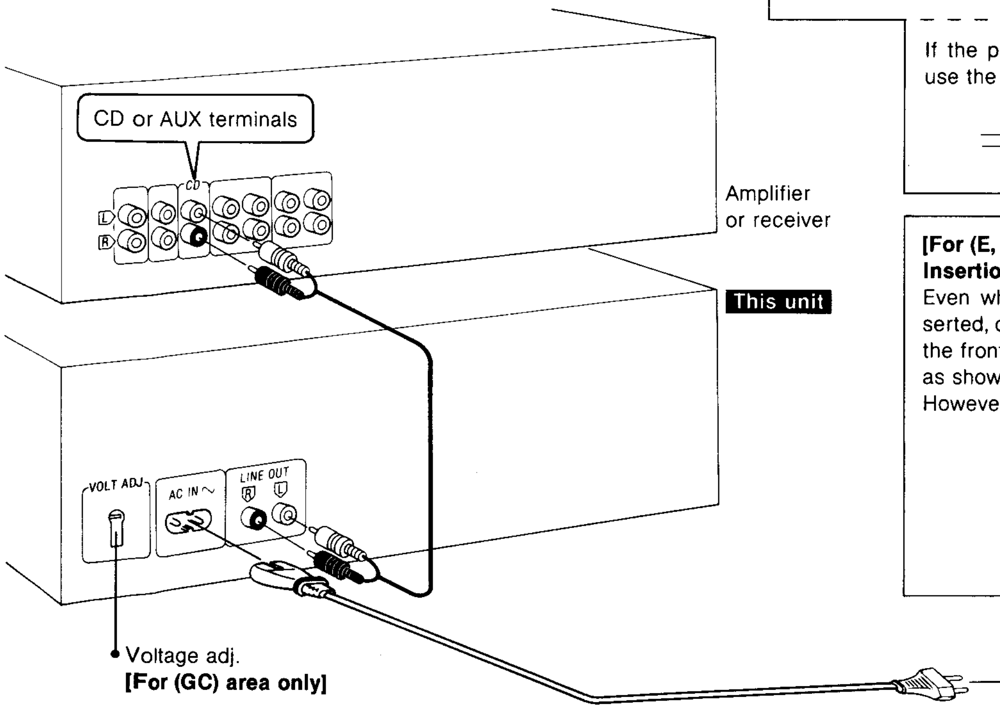
If the power plug will not fit your socket, use the power plug adaptor (included).

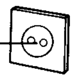


[For (E, EB, EG, GC) areas]
Insertion of Connector

Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing.
However there is no problem using the unit.


Connector
Approx. 6 mm
Appliance inlet


CD or AUX terminals
CD
L
R
Amplifier or receiver
This unit
VOLT ADJ
AC IN ~
LINE OUT
R
L
Voltage adj.
[For (GC) area only]


Household AC outlet

■ CAUTION FOR AC MAINS LEAD

For (EB) area.

("EB" area code model only)

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 5-ampere fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362.
Check for the ASTA mark ◈ or the BSI mark ♡ on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local dealer.

> **CAUTION!**
> IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
> THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral
Brown: Live

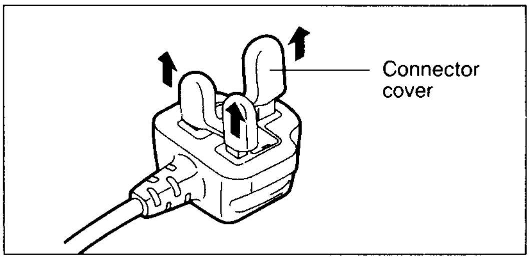
As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol ⏚.

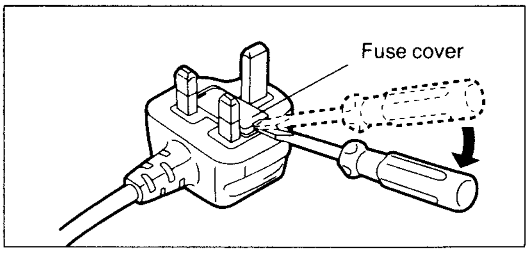
Before use

Remove the connector cover as follows.

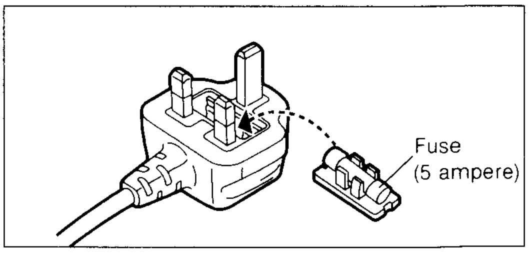


How to replace the fuse

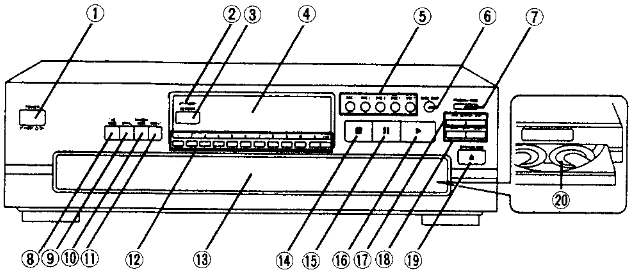
1. Remove the fuse cover with a screwdriver.



2. Replace the fuse and attach the fuse cover.

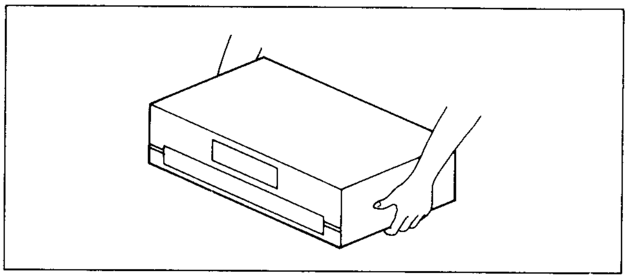


■ FRONT PANEL CONTROLS



No.	*Name*	*Ref. page*
①	**Power "STANDBY ⏻ /ON" switch (POWER, STANDBY ⏻ /ON)** Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.	
②	**"STANDBY" indicator (STANDBY)** When the unit is connected to the AC mains supply, this indicator lights up in standby mode and goes out when the unit is turned on.	
③	**Remote control signal sensor (SENSOR)** The word "SENSOR" does not appear on the panel, but if you have an amplifier (or receiver) with remote control transmitter which is manufactured by Technics, it is possible to operate the main unit using this remote control transmitter. (Some remote control transmitters cannot be used.)	
④	**Display**	
⑤	**Disc buttons (DISC 1 – 5)**	
⑥	**Disc skip button (DISC SKIP)**	
⑦	**Program mode button (PROGRAM MODE)**	
⑧	**Time mode button (TIME MODE)**	
⑨	**Spiral button (SPIRAL)**	
⑩	**Random mode button (RANDOM MODE)**	
⑪	**Repeat button (REPEAT)**	
⑫	**Numeric buttons (1 – 10, 0, >10)**	
⑬	**Loading drawer**	
⑭	**Stop button (■)**	
⑮	**Pause button (❚❚)**	
⑯	**Play button (▶)**	
⑰	**Search buttons (◀◀ SEARCH ▶▶)**	
⑱	**Skip buttons (|◀◀ SKIP ▶▶|)**	
⑲	**Loading drawer open/close button (▲ OPEN/CLOSE)**	
⑳	**Disc trays (1 – 5)**	

■ CAUTIONS CONCERNING THE MOVING OF THIS UNIT



CAUTION

Before moving the changer to another location, be sure to carry out the "Preparations for moving the unit" described below.

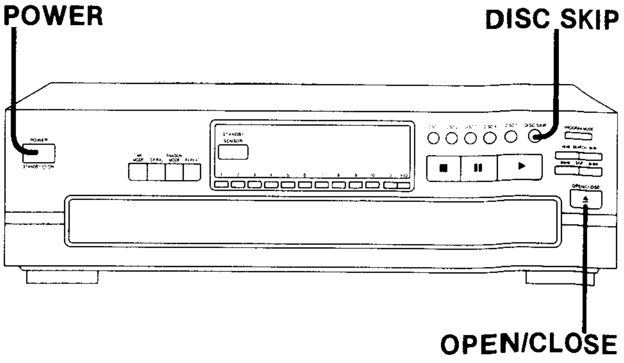
Failure to do so will expose the compact discs and the changer to the risk of severe damage.

Preparations for moving the unit

All of the discs must be removed so that the trays are completely empty.
Use the following procedure.

① **Press POWER to switch off the unit.**
② **Press POWER to switch on the unit.**
(If there is a disc in the play section, it will be returned to the disc tray at this time.)
③ **Press OPEN/CLOSE to open the loading drawer.**
④ **Press DISC SKIP to rotate the disc trays and remove the discs from all disc trays.**
⑤ **Press OPEN/CLOSE to close the loading drawer.**
⑥ **Press POWER to switch off the unit.**

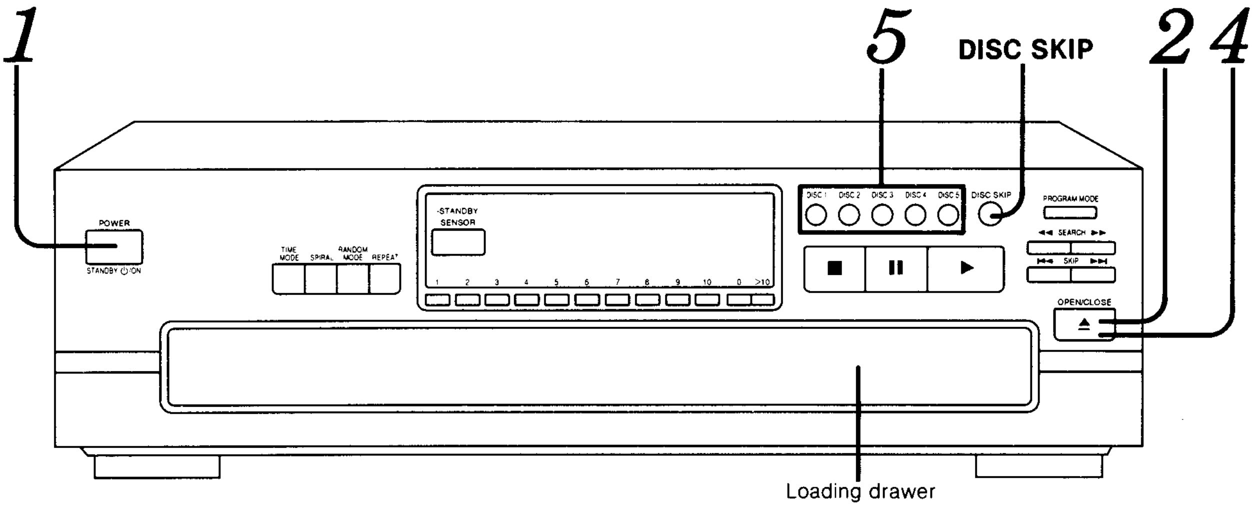
If you have pressed a wrong button by mistake, return to step ①.



■ BASIC OPERATIONS

Sequential play

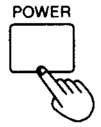
All of the discs will be played, beginning from track 1 on the selected disc.


1
5
DISC SKIP
2 4
POWER
STANDBY ⏻/ON
TIME MODE
SPIRAL
RANDOM MODE
REPEAT
·STANDBY
SENSOR
DISC 1 DISC 2 DISC 3 DISC 4 DISC 5
DISC SKIP
PROGRAM MODE
SEARCH
SKIP
OPEN/CLOSE

Loading drawer

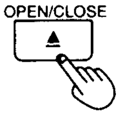
The explanation below is an example of operation in the case where all five disc trays in the changer are holding CDs.

1 Press POWER.

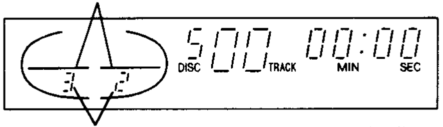


The unit will switch on.

2 Press OPEN/CLOSE to open the loading drawer.



Indicates that the loading drawer is open.


500 00:00
DISC
TRACK
MIN
SEC

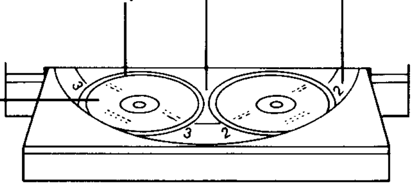
Numbers of the trays in which discs are loaded.

3 Load the disc(s) on the disc tray(s).

The discs can be loaded two at a time by pressing DISC SKIP to rotate the carousel.

Disc tray Carousel Disc number

Label must face upward.



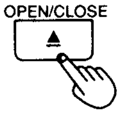
Note

Do not load 3″ (8 cm) and 5″ (12 cm) discs on the same disc tray.

CAUTION

Do not touch the loading drawer and carousel while they are in motion, and do not attempt to rotate the carousel by hand; doing so could result in incorrect operation of the unit and/or damage to the discs.

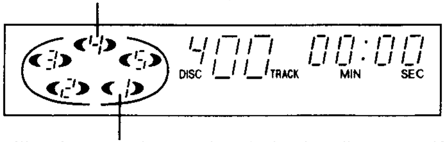
4 Press OPEN/CLOSE again to close the loading drawer.



Note

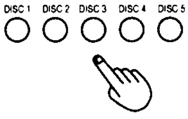
Do not attempt to close the drawer by hand.

Current play position (The numeral illuminates with a red color.)


400 00:00
DISC
TRACK
MIN
SEC

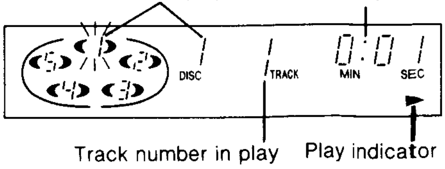
Illuminates when a disc is in the disc tray. If there is no disc in the disc tray, the indication disappears when the disc tray comes to the play position.

5 Press the desired disc button (1 – 5).


DISC 1 DISC 2 DISC 3 DISC 4 DISC 5

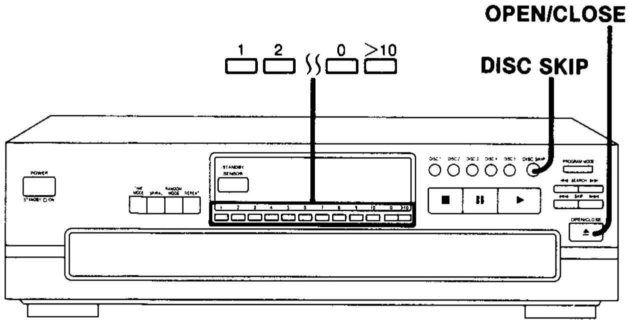
Play will begin from the selected disc. If a disc is not on the selected disc tray, the changer plays the disc at the next number.

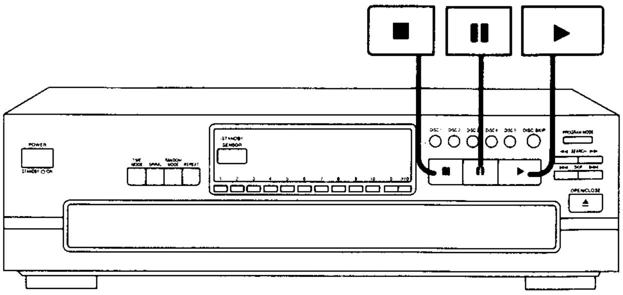
Disc number in play Elapsed play time


1 1 0:01
DISC
TRACK
MIN
SEC

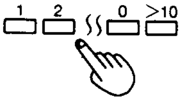
Track number in play Play indicator

The changer plays all the tracks on all the discs in order and stops automatically when the last track on the last disc finishes playing. The first disc will then be at the playing position.

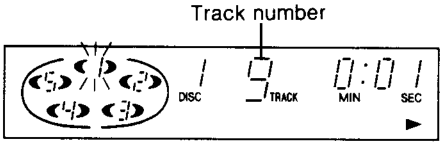

OPEN/CLOSE
DISC SKIP
1
2
0
>10



To directly access a desired track



Press the numeric button(s) to select the track.

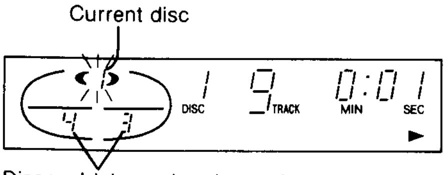

Track number
1
DISC
9
TRACK
0:01
MIN
SEC
▶

To select a track between 1 and 10:
Press the corresponding number on the numeric button.
To select a two-digit track number over 10:
First press >10, and then press the numbers for the two digits.
For example; number 20:
Press >10, then 2, and then 0.

To exchange discs during play

While playing a disc, it is possible to change the other discs without interrupting play.

① **Press OPEN/CLOSE to open the loading drawer.**


Current disc
1
DISC
9
TRACK
0:01
MIN
SEC
▶

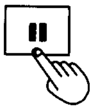
Discs which can be changed.

② **Press DISC SKIP to rotate the disc trays and exchange the discs.**
The carousel will move by one disc tray. Pressing again moves the carousel in the opposite direction by two disc trays.

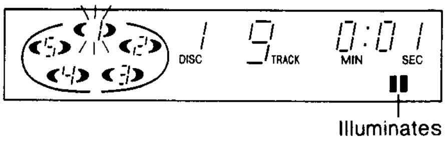
③ **Press OPEN/CLOSE to close the loading drawer.**

Note
If you play a disc with the loading drawer open, discs other than the current disc cannot be played.

To temporarily stop play



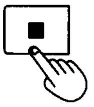
Press ▮▮.


1
DISC
9
TRACK
0:01
MIN
SEC
▮▮
Illuminates

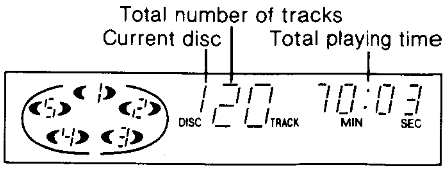
To resume play

Press ▶.

To stop play

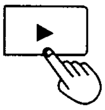


Press ■.
The display will show the total number of tracks and the total playing time of the current disc.


Total number of tracks
Current disc
Total playing time
1
DISC
20
TRACK
10:03
MIN
SEC

The total playing time displayed includes the silent sections between tracks. For this reason, it may be a few seconds longer than the playing time indicated on the disc.

To resume play



Press ▶.

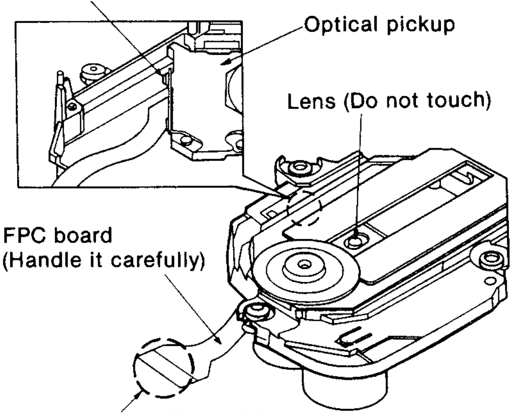
CAUTION
Do not move this changer with a compact disc inside the unit. If a disc comes off the disc tray, it might be scratched or the changer might become incapable of playing.
(Refer to "Cautions concerning the moving of this unit" on page 5.)

■ HANDLING PRECAUTIONS FOR TRAVERSE DECK

The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

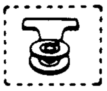
• Handling of traverse deck (optical pickup)

1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an antistatic shorting pin is inserted into the flexible board (FPC board).
   When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board (FPC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

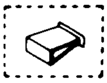


**Be sure to short this position
(Use the shorting pin or clip)**

Clip



Shorting pin

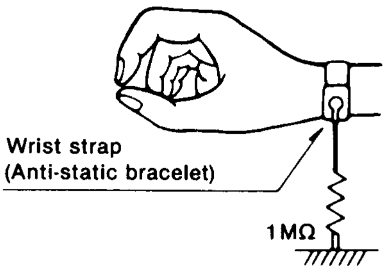


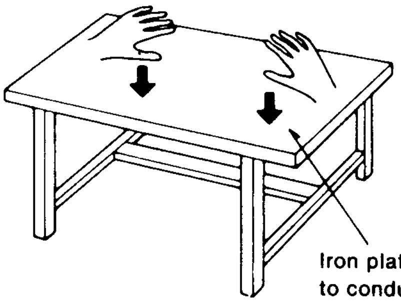
• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table gounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:

The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).





**Iron plate or some metals
to conduct electricity**

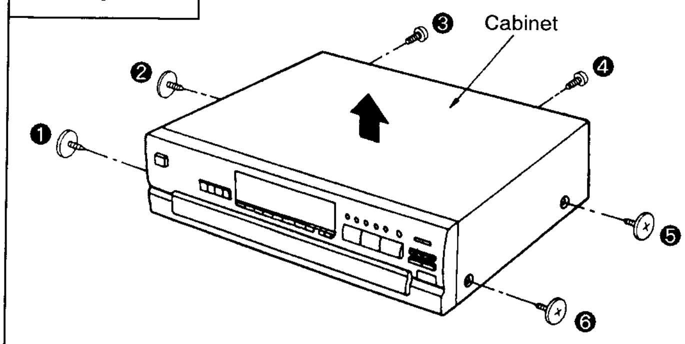
■ DISASSEMBLY INSTRUCTIONS

"ATTENTION SERVICER"
Some chassis components may have sharp edges. Be careful when disassembling and servicing.
Warning: This projuct uses a laser diode. Refer to caution statements on page 2.
ACHTUNG: • Die lasereinheit nicht zerlegen.
• Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

Ref.No.
1

Removal of the cabinet

Procedure
1

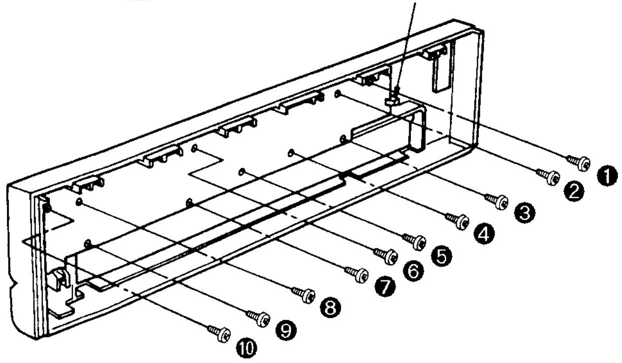

❸
Cabinet
❹
❷
❶
❺
❻

1. Remove the 6 screws(❶ ~ ❻).
2. Remove the cabinet in the direction of arrow.

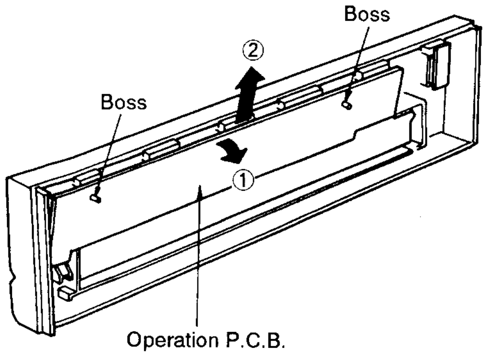
Ref.No.
3

Removal of the operation P.C.B.

Procedure
1 → 2 → 3


Claw
❶
❷
❸
❹
❺
❻
❼
❽
❾
❿

1. Remove the 10 screws(❶ ~ ❿).
2. Release the 1 claw.

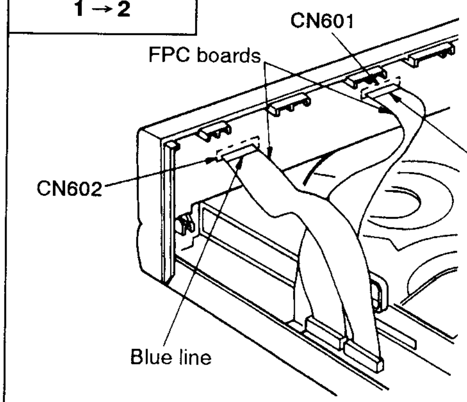

Boss
②
Boss
①
Operation P.C.B.

3. Tilt the operation P.C.B. in the direction of arrow ① and release the bosses. Then, remove the operation P.C.B. in the direction of arrow ②.

Ref.No.
2

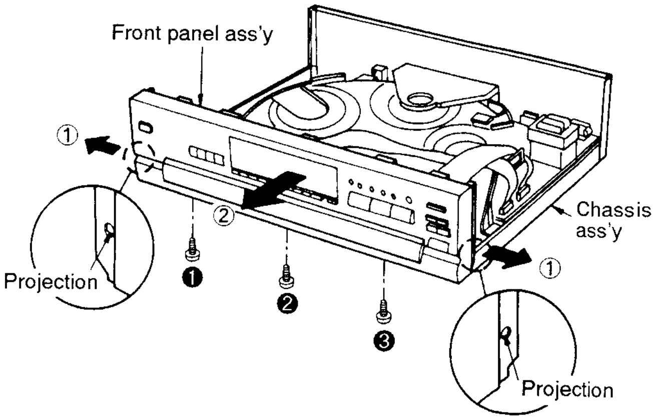
Removal of the front panel ass'y

Procedure
1 → 2


CN601
FPC boards
CN602
Blue line
Blue line

■ Note on installation
Connect the FPC board with the blue line upward.

1. Pull out the FPC boards from connectors(CN601, CN602).

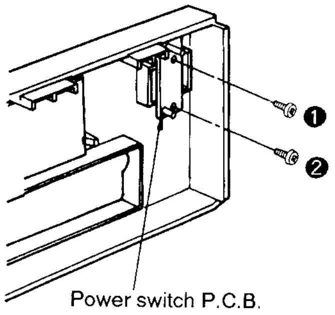

Front panel ass'y
①
②
Chassis ass'y
①
Projection
❶
❷
❸
Projection

2. Remove the 3 screws(❶ ~ ❸).
3. Pull the front panel ass'y in both direction of arrow ① to unlock it from the projections of the chassis ass'y.
4. Remove the front panel ass'y in the direction of arrow ②.

Ref.No.
4

Removal of the power switch P.C.B.

Procedure
1 → 2 → 4

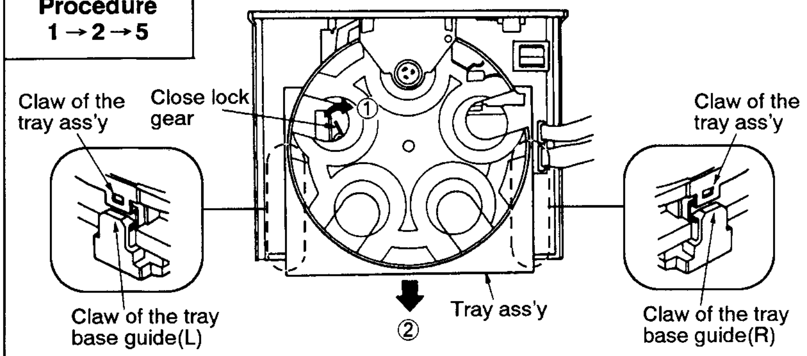

❶
❷
Power switch P.C.B.

- Remove the 2 screws(❶, ❷).

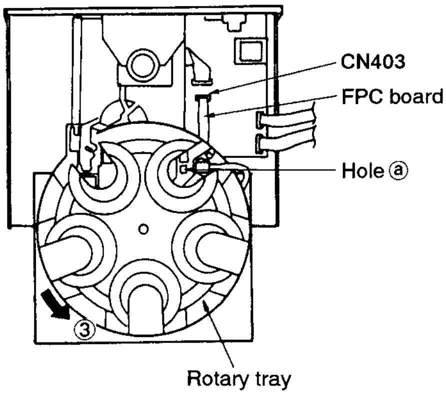
Ref.No. 5

Removal of the tray ass'y

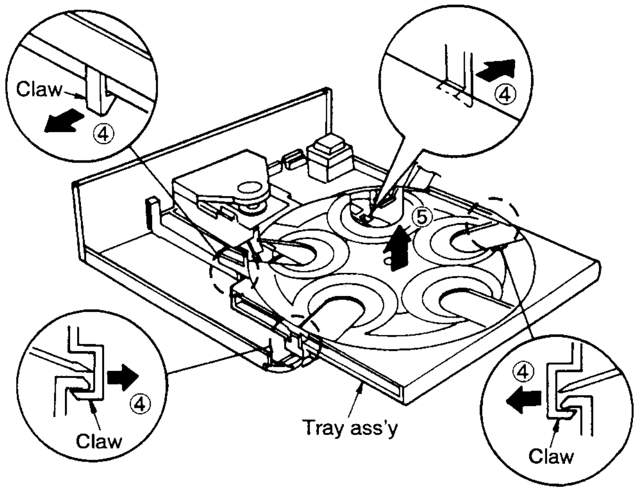
Procedure
1 → 2 → 5


Claw of the tray ass'y
Close lock gear
①
Claw of the tray ass'y
Claw of the tray base guide(L)
②
Tray ass'y
Claw of the tray base guide(R)

1. Keep the close lock gear pressed in the direction of arrow ①, and move the tray ass'y in the direction of arrow ②.
2. Fit the claw of the tray ass'y in the claw of the tray base guide(L).
3. Fit the claw of the tray ass'y in the claw of the tray base guide(R).


CN403
FPC board
Hole ⓐ
③
Rotary tray

4. Pull out the FPC board from connector(CN403).
5. Rotate the rotary tray to the position that can be confirmed the hole ⓐ in the direction of arrow ③.

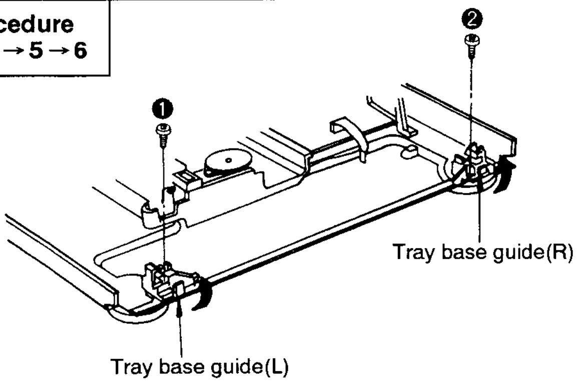

Claw
④
④
⑤
④
Claw
Tray ass'y
④
Claw

5. Push and release the 4 claws in the direction of arrow ④, and then remove the tray ass'y in the direction of arrow ⑤.

Ref.No. 6

Removal of the tray base guide(L) and tray base guide(R)

Procedure
1 → 2 → 5 → 6

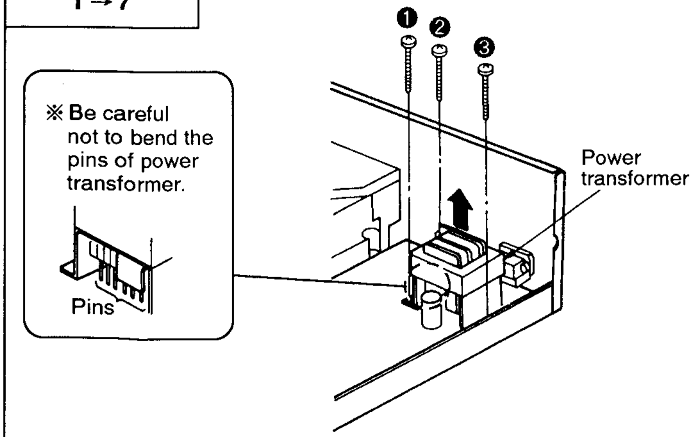

❷
❶
Tray base guide(R)
Tray base guide(L)

1. Remove the 2 screws(❶, ❷).
2. Remove the tray base guide(L) and tray base guide(R) in the direction of arrow.

Ref.No. 7

Removal of the power transformer

Procedure
1 → 7

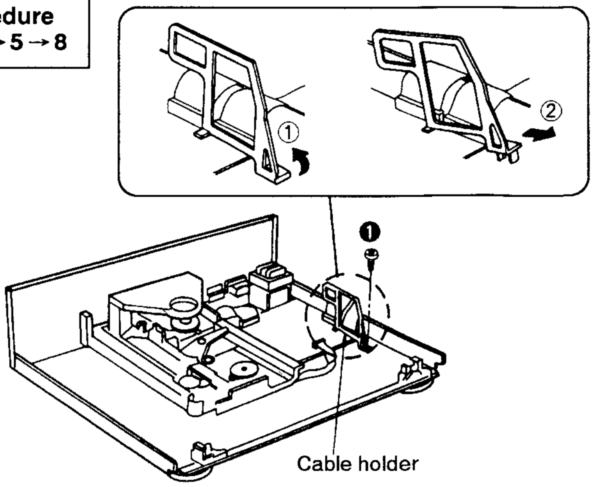

※ Be careful not to bend the pins of power transformer.
Pins
❶
❷
❸
Power transformer

1. Remove the 3 screws(❶ ~ ❸).
2. Remove the power transformer in the direction of arrow.

Ref.No. 8

Removal of the cable holder

Procedure
1 → 2 → 5 → 8

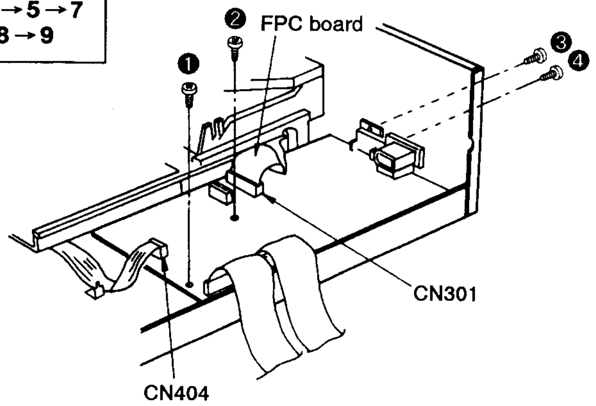

①
②
❶
Cable holder

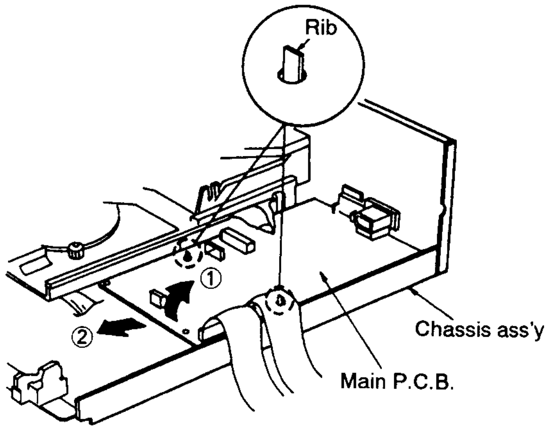
1. Remove the 1 screw(❶).
2. Lift the cable holder in the direction of arrow ①, and then remove it in the direction of arrow ②.

Ref.No.
9

Removal of the main P.C.B.

Procedure
1 → 2 → 5 → 7 → 8 → 9


❷ FPC board
❶
❸
❹
CN301
CN404

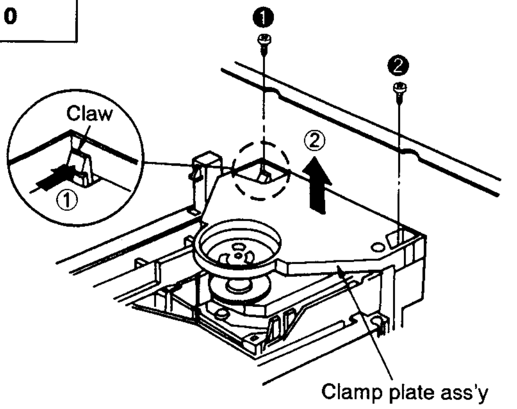

Rib
①
②
Chassis ass'y
Main P.C.B.

1. Pull out the FPC board from connector(CN301).
2. Remove 1 connector(CN404).
3. Remove the 4 screws(❶ ~ ❹).
4. Lift up the main P.C.B. in the direction of arrow ①, and release the 2 ribs on the chassis ass'y. Then , remove the main P.C.B. in the direction of arrow ②.

Ref.No.
10

Removal of the clamp plate ass'y

Procedure
1 → 10

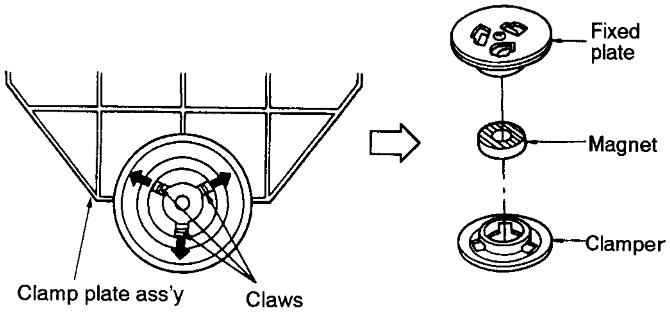

❶
❷
Claw
①
②
Clamp plate ass'y

1. Remove the 2 screws(❶, ❷).
2. Push the claw in the direction of arrow ①, and then remove the clamp plate ass'y in the direction of arrow ②.

Ref.No.
11

Removal of the fixed plate, magnet and clamper

Procedure
1 → 10 → 11

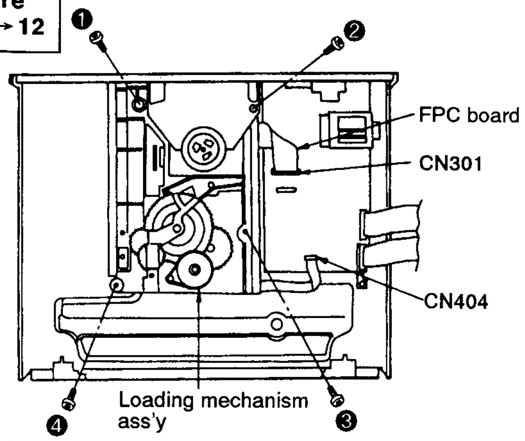

Fixed plate
Magnet
Clamper
Clamp plate ass'y
Claws

- Release the 3 claws in the direction of arrow.

Ref.No.
12

Removal of the loading mechanism ass'y

Procedure
1 → 2 → 5 → 12

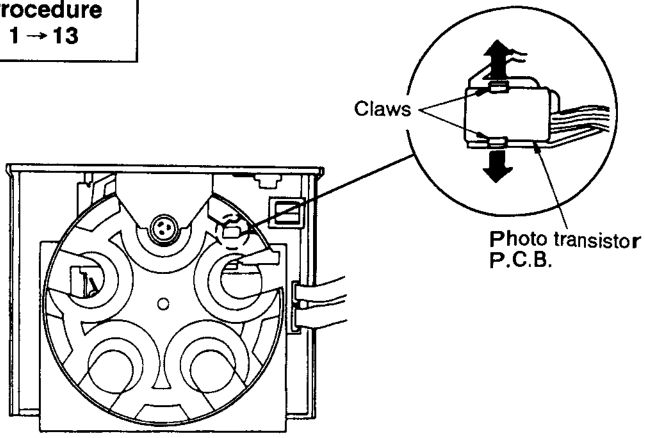

❶
❷
FPC board
CN301
CN404
Loading mechanism ass'y
❹
❸

1. Pull out the FPC board from connector(CN301).
2. Remove 1 connector(CN404).
3. Remove the 4 screws(❶ ~ ❹).

Ref.No.
13

Removal of the photo transistor P.C.B.

Procedure
1 → 13

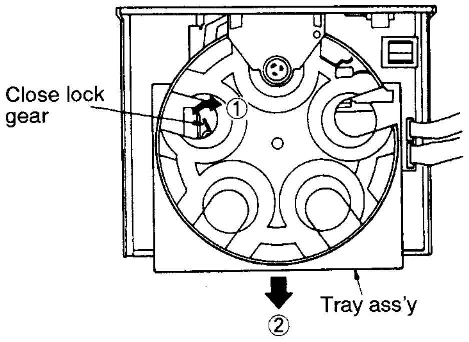

Claws
Photo transistor P.C.B.

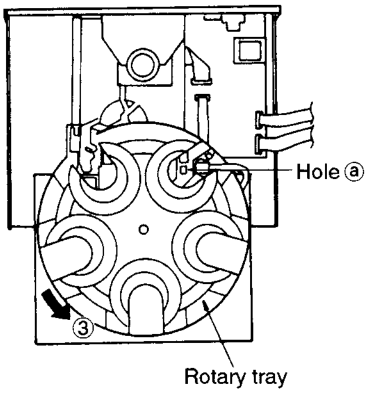
- Release the 2 claws in the direction of arrow.

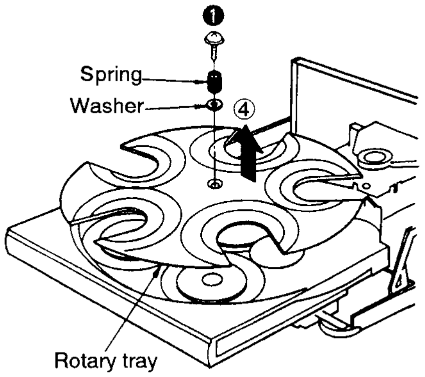
Ref.No. 14

Removal of the rotary tray

Procedure
1 → 2 → 14


Close lock gear
①
Tray ass'y
②


Hole ⓐ
③
Rotary tray

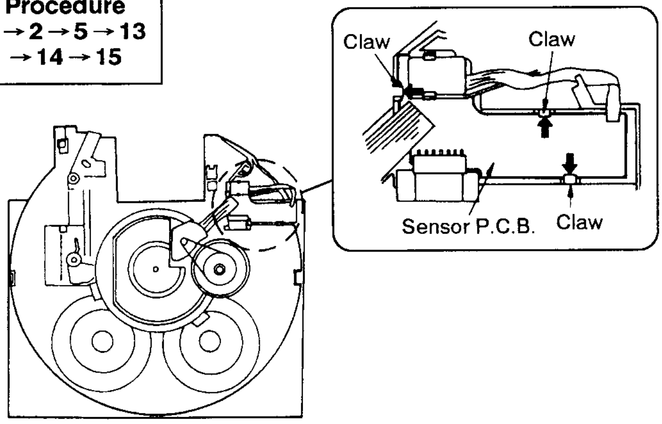

❶
Spring
Washer
④
Rotary tray

1. Keep the close lock gear pressed in the direction of arrow ①, and move the tray ass'y in the direction of arrow ②.
2. Rotate the rotary tray to the position that can be confirmed the hole ⓐ in the direction of arrow ③.
3. Remove the 1 screw(❶).
4. Remove the spring and washer.
5. Remove the rotary tray in the direction of arrow ④.

Ref.No. 15

Removal of the sensor P.C.B.

Procedure
1 → 2 → 5 → 13 → 14 → 15

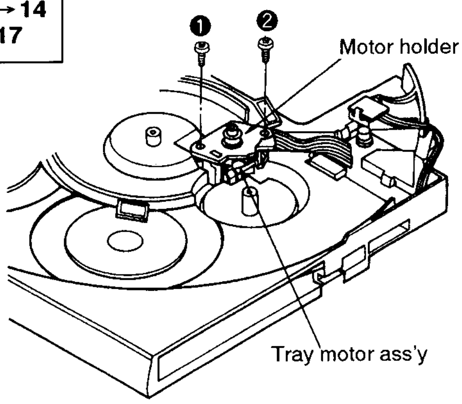

Claw
Claw
Sensor P.C.B.
Claw

- Release the 3 claws in the direction of arrow, and remove the sensor P.C.B.

Ref.No. 17

Removal of motor holder and tray motor ass'y

Procedure
1 → 2 → 5 → 14 → 16 → 17

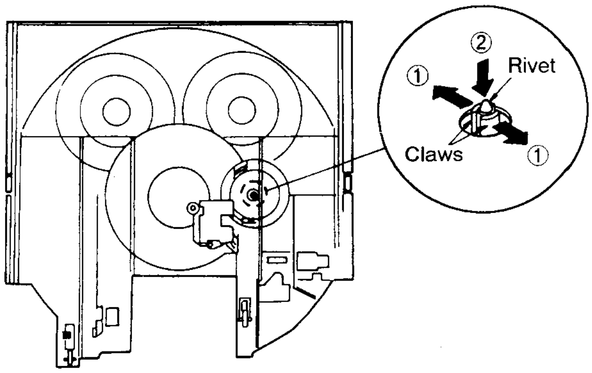

❶
❷
Motor holder
Tray motor ass'y

1. Remove the 2 screws(❶, ❷).
2. Remove the motor holder and tray motor ass'y in the direction of arrow.

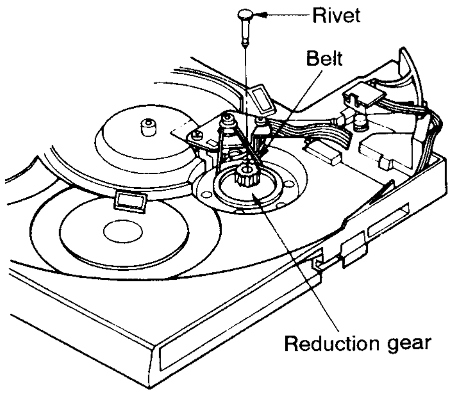
Ref.No. 16

Removal of reduction gear

Procedure
1 → 2 → 5 → 14 → 16


②
Rivet
①
Claws
①

1. Release the 2 claws in the direction of arrow ①, and then push the rivet in the direction of arrow ②.

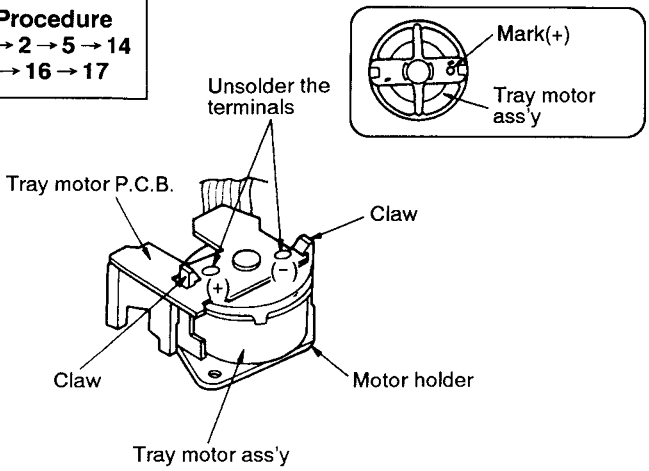

Rivet
Belt
Reduction gear

2. Pull out the rivet.
3. Remove the belt.
3. Remove the reduction gear.

Ref.No. 18

Removal of the tray motor P.C.B.

Procedure
1 → 2 → 5 → 14 → 16 → 17

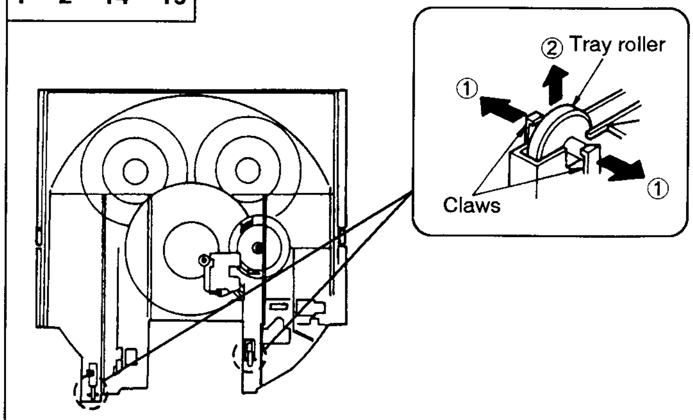

Mark(+)
Tray motor ass'y
Unsolder the terminals
Tray motor P.C.B.
Claw
(+)
(−)
Claw
Motor holder
Tray motor ass'y

1. Release the 2 claw, and then remove the motor holder.
2. Unsolder the terminals of the tray motor ass'y.

Ref.No. 19

Removal of the tray roller

Procedure
1 → 2 → 14 → 19

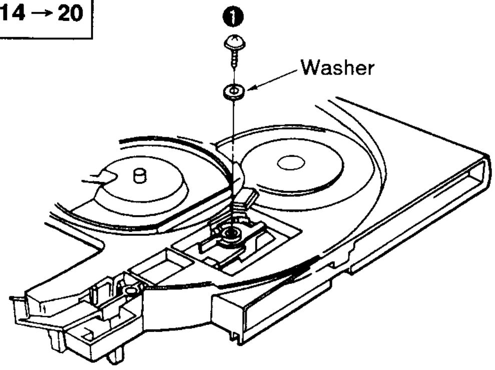

② Tray roller
①
①
Claws

- Release the 2 claws in the direction of arrow ①, and then remove the tray roller in the direction of arrow ②.

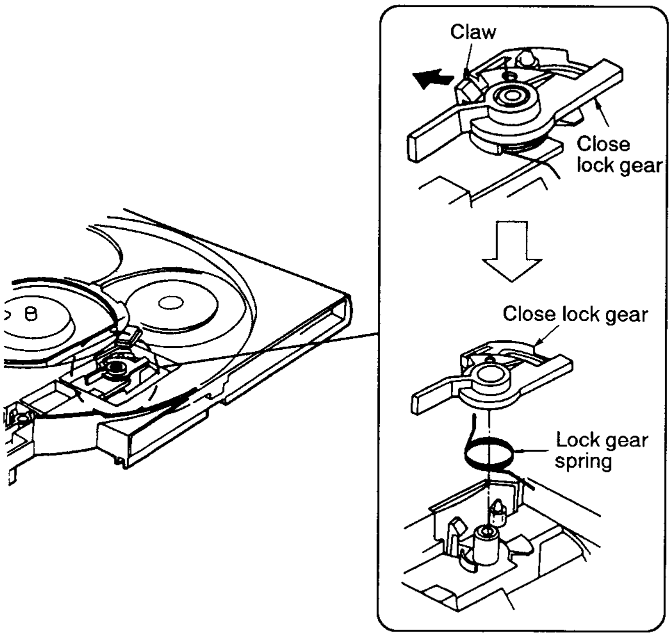
Ref.No. 20

Removal of the close lock gear

Procedure
1 → 2 → 14 → 20



1. Remove the 1 screw(❶) and washer.

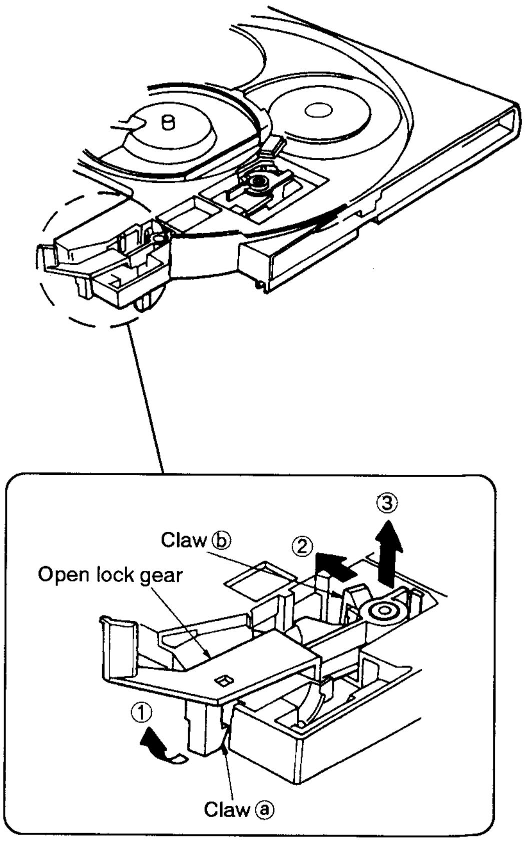

Claw
Close lock gear
Close lock gear
Lock gear spring

2. Release the 1 claw and then remove the close lock gear and lock gear spring.

Ref.No. 21

Removal of the open lock gear

Procedure
1 → 2 → 5 → 14 → 21

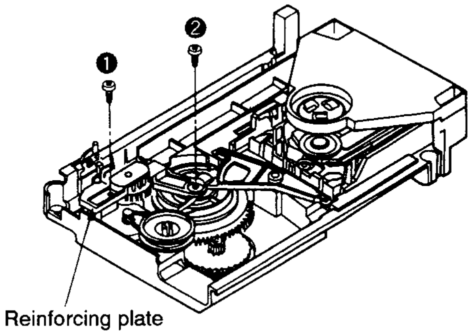

③
Claw ⓑ
②
Open lock gear
①
Claw ⓐ

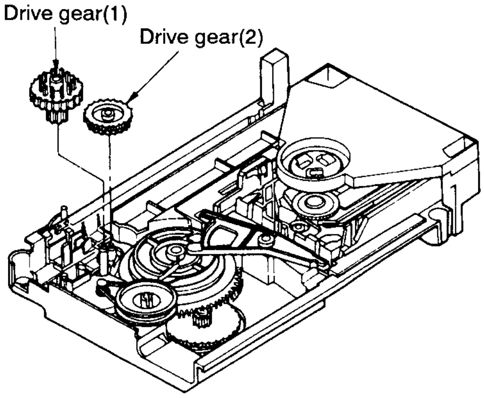
1. Release the claw ⓐ of open lock gear in the direction of arrow ①.
2. Release the claw ⓑ of open lock gear in the direction of arrow ②, and then remove the of open lock gear in the direction of arrow ③.

Ref.No.
22

Removal of the reinforcing plate, drive gear(1) and drive gear(2)

Procedure
1 → 2 → 5 → 22


❶
❷
Reinforcing plate

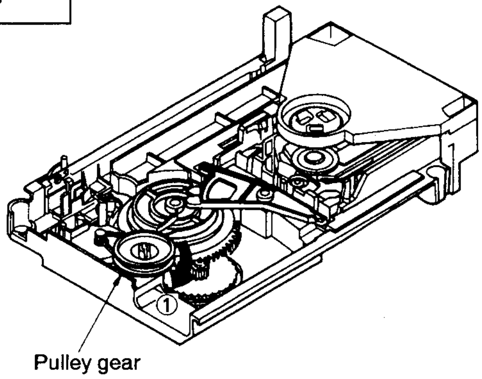

Drive gear(1)
Drive gear(2)

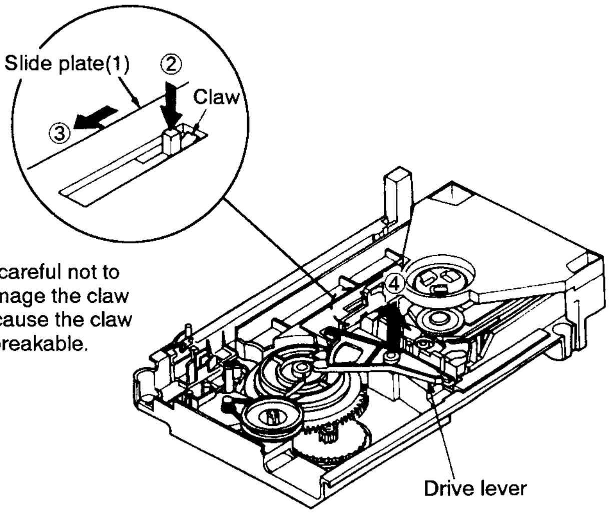
1. Remove the 2 screws(❶, ❷).
2. Remove the reinforcing plate.
3. Remove the drive gear(1) and drive gear(2).

Ref.No.
23

Removal of the drive lever

Procedure
1 → 2 → 5 → 22 → 23


①
Pulley gear


Slide plate(1)
②
Claw
③
④
Drive lever

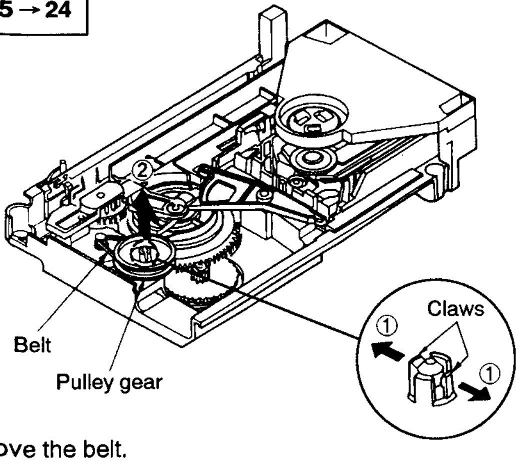
Note) Be careful not to damage the claw because the claw is breakable.

1. Rotate the pulley gear to full position in the direction of arrow ①.
2. Push the claw in the direction of arrow ②, and then move the slide plate(1) in the direction of arrow ③.
3. Remove the drive lever in the direction of arrow ④.

Ref.No.
24

Removal of the pulley gear

Procedure
1 → 2 → 5 → 24

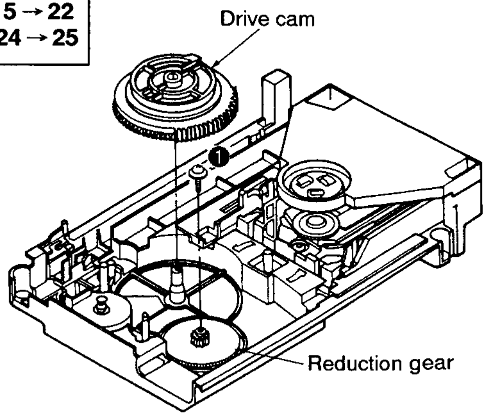

②
Claws
①
①
Belt
Pulley gear

1. Remove the belt.
2. Release the 2 claws in the direction of arrow ①, and then remove the pulley gear in the direction of arrow ②.

Ref.No.
25

Removal of the drive cam and reduction gear

Procedure
1 → 2 → 5 → 22 → 23 → 24 → 25

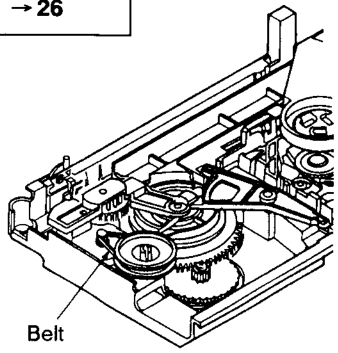

Drive cam
❶
Reduction gear

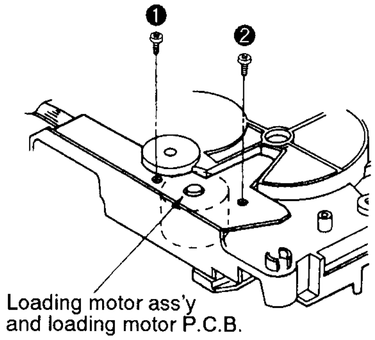
1. Remove the drive cam.
2. Remove 1 screw(❶).
3. Remove the reduction gear.

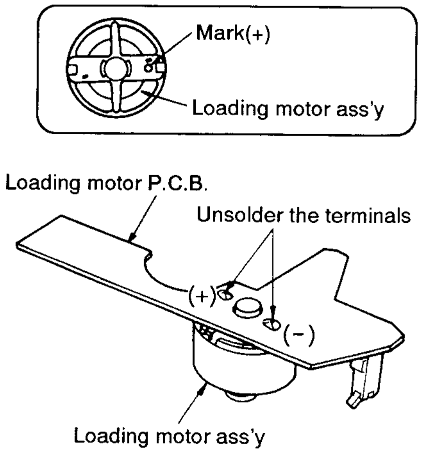
Ref.No.
26

Removal of the loading motor ass'y and loading motor P.C.B.

Procedure
1 → 2 → 5 → 12 → 26




❶
❷
Loading motor ass'y and loading motor P.C.B.

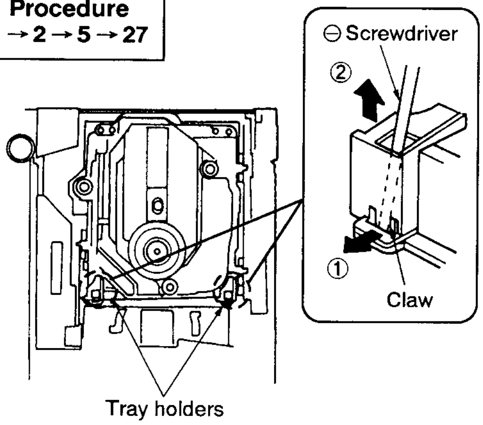

Mark(+)
Loading motor ass'y
Loading motor P.C.B.
Unsolder the terminals
(+)
(-)
Loading motor ass'y

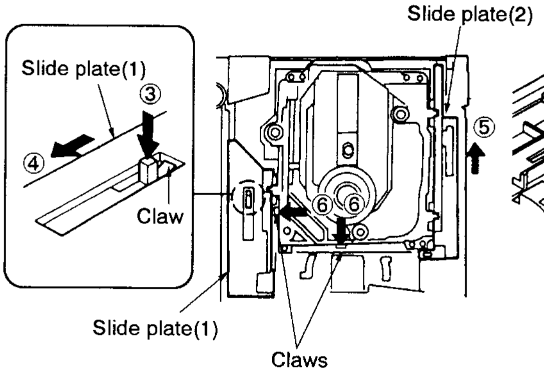
1. Remove the belt.
2. Remove the 2 screws(❶, ❷).
3. Remove the loading motor ass'y and loading motor P.C.B.
4. Unsolder the terminals of the loading motor ass'y.

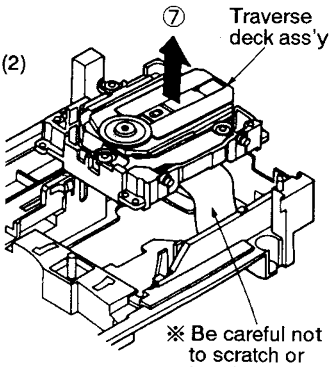
Ref.No.
27

Removal of the traverse deck ass'y

Procedure
1 → 2 → 5 → 27


⊖ Screwdriver
②
①
Claw
Tray holders


Slide plate(1)
③
④
Claw
Slide plate(2)
⑤
⑥
⑥
Slide plate(1)
Claws


⑦
Traverse deck ass'y

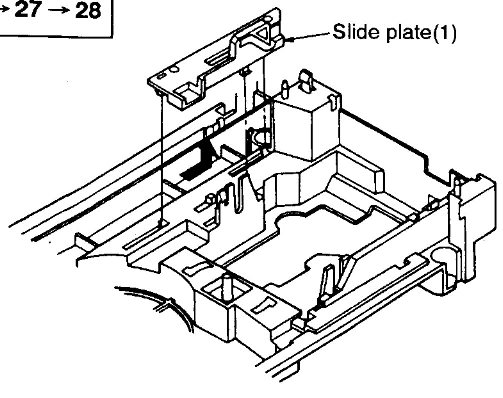
※ Be careful not to scratch or bend the FPC board.

1. While pushing the claw of tray holders in the direction ① using the ⊖ screwdriver, remove the tray holder in the direction of arrow②.
2. Push the claw in the direction of arrow③, and then move the slide plate(1) in the direction of arrow④.
3. Move the slide plate(2) in the direction of arrow⑤.
4. Release the 2 claws in the direction of arrow⑥, and then remove the traverse deck ass'y in the direction of arrow ⑦.

Ref.No.
28

Removal of the slide plate(1)

Procedure
1 → 2 → 5 → 22 → 23 → 27 → 28

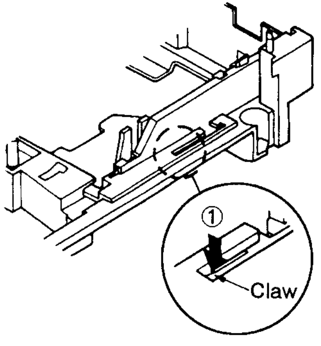

Slide plate(1)

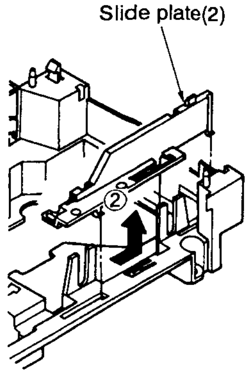
- Remove the slide plate(1) in the direction of arrow.

Ref.No.
29

Removal of the slide plate(2)

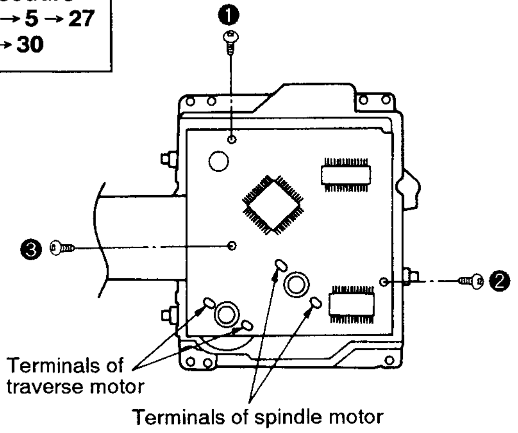
Procedure
1 → 2 → 5 → 22 → 23 → 27 → 29




Slide plate(2)
②

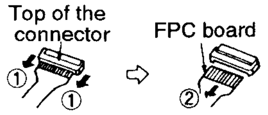
- Push the claw in the direction of arrow①, and then remove the slide plate(2) in the direction of arrow②.

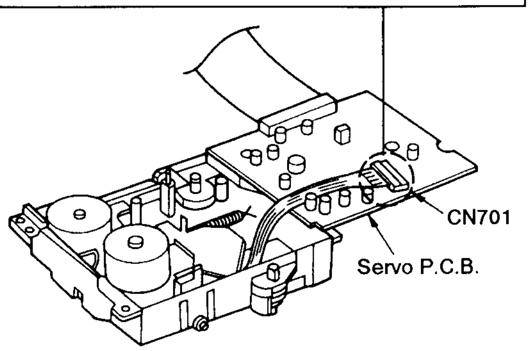
Ref.No. 30	Removal of the servo P.C.B.
Procedure 1→2→5→27→30	


❶
❷
❸
Terminals of traverse motor
Terminals of spindle motor

1. Remove the 3 screws(❶~❸).
2. Unsolder the 2 terminals of spindle motor.
3. Unsolder the 2 terminals of traverse motor.

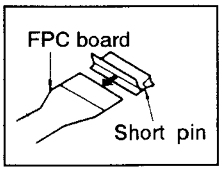
1. Push the top of the connector in the direction of arrow①.
2. Remove the FPC board in the direction of arrow②.


Top of the connector
FPC board
①
①
②

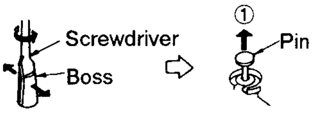

CN701
Servo P.C.B.

4. Remove the FPC board from connector(CN701).

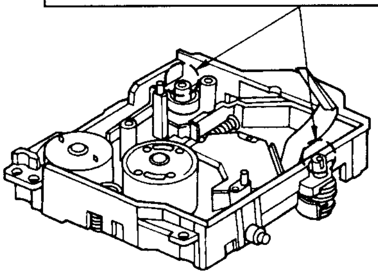
Caution:
Insert a short pin into the traverse unit FPC board.
(Refer to "handling precautions for traverse deck" on page 8.)


FPC board
Short pin

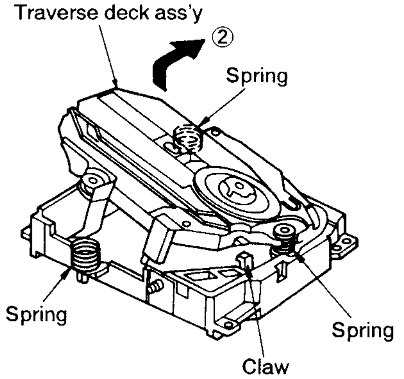
Ref.No. 31	Removal of the traverse deck ass'y
Procedure 1→2→5→27→30→31	


Screwdriver
Boss
①
Pin

1. Widen the bosses by using a regular screwdriver or similar object.
2. Pull out the pins.



1. Remove the 2 pins in the direction of arrow①.


Traverse deck ass'y
②
Spring
Spring
Spring
Claw

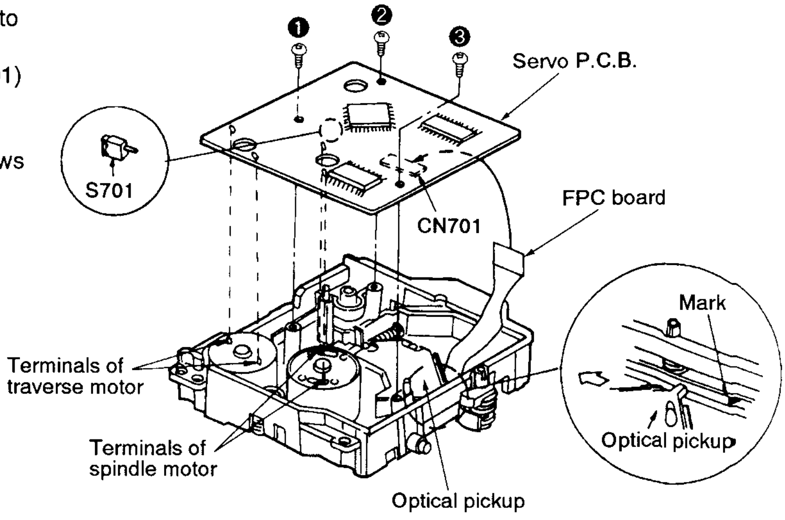
2. Release the claw, and then remove the traverse deck ass'y in the direction of arrow②.

Caution:
Be careful not to lose the 3 springs because those will also be removed on removal of the traverse deck ass'y.

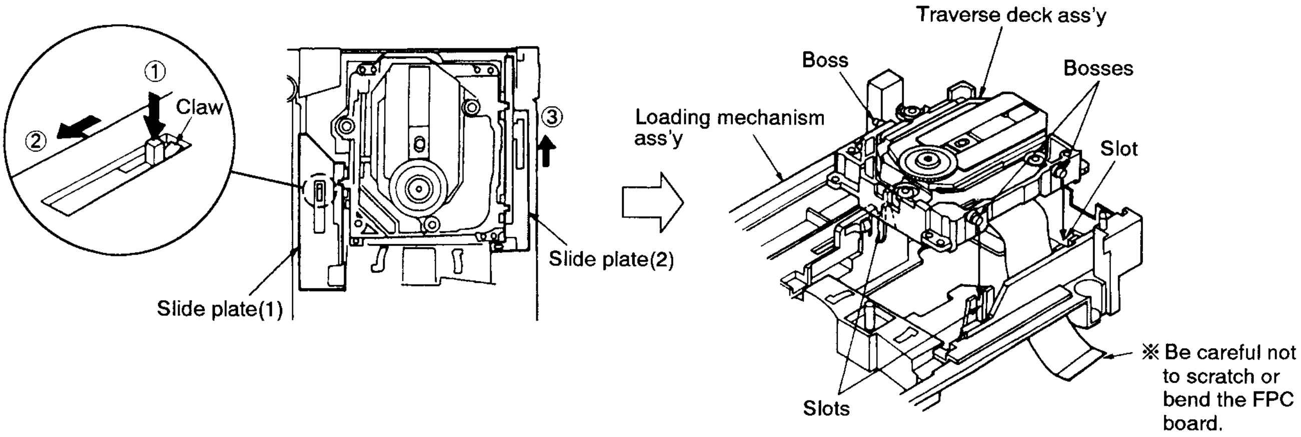
■ INSTALLATION OF SERVO P.C.B.

1. When installing servo P.C.B., move the optical pickup to the more external side than the mark (▲).
   (When the optical pickup is not moved, the switch(S701) on the servo P.C.B. may be broken.)
2. Connect the FPC board to the connector(CN701).
3. Install the servo P.C.B. to the traverse unit with 3 screws (❶~❸).
4. Solder the 2 terminals of the traverse motor and the 2 terminals of the spindle motor.

Note:
- Insert the FPC board into the connector and lock securely.
- After installing the motor with screws, solder each motor terminal.


❶
❷
❸
Servo P.C.B.
S701
CN701
FPC board
Mark
Optical pickup
Terminals of traverse motor
Terminals of spindle motor
Optical pickup

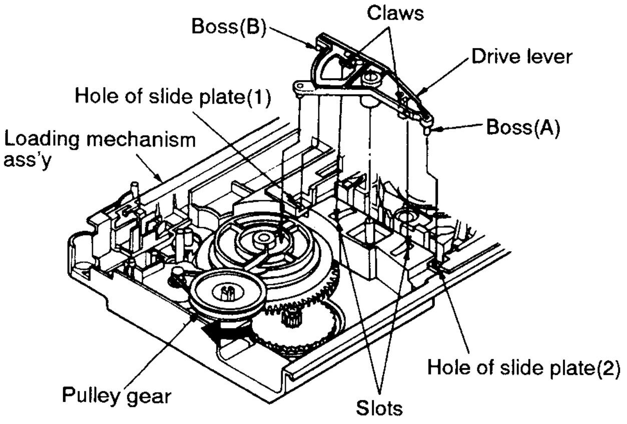
■ Installation of the traverse deck ass'y


①
②
Claw
③
Slide plate(2)
Slide plate(1)
Traverse deck ass'y
Boss
Bosses
Loading mechanism ass'y
Slot
Slots

※ Be careful not to scratch or bend the FPC board.

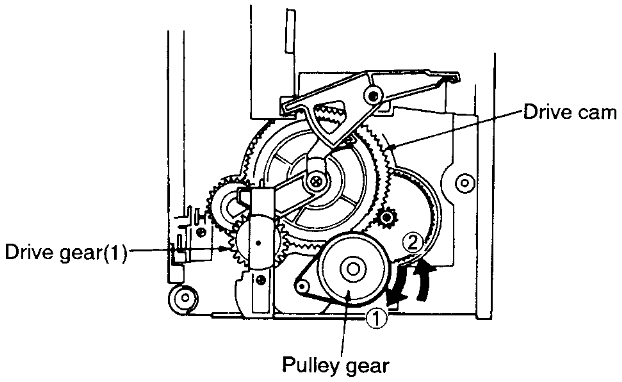
1. Push the claw in the direction of arrow ①, and then move the slide plate(1) in the direction of arrow ②.
2. Move the slide plate(2) in the direction of arrow ③.
3. Align the 3 bosses of traverse deck ass'y with the slots of loading mechanism ass'y.

■ Installation of the drive lever


Boss(B)
Claws
Drive lever
Hole of slide plate(1)
Boss(A)
Loading mechanism ass'y
Pulley gear
Slots
Hole of slide plate(2)

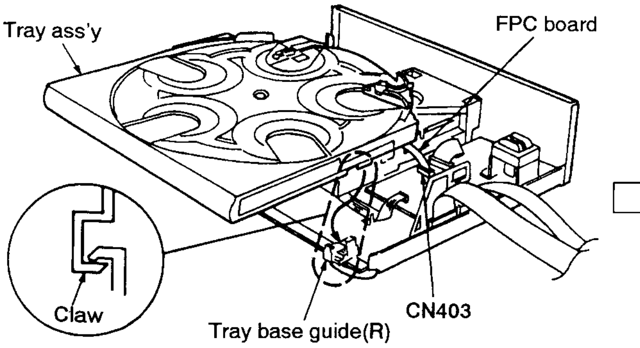
1. Rotate the pulley gear to full position in the direction of arrow.
2. Align the boss(A) with the hole of slide plate(2).
3. Align the boss(B) with the hole of slide plate(1).
4. Align the claws of drive lever with the slots of loading mechanism ass'y.

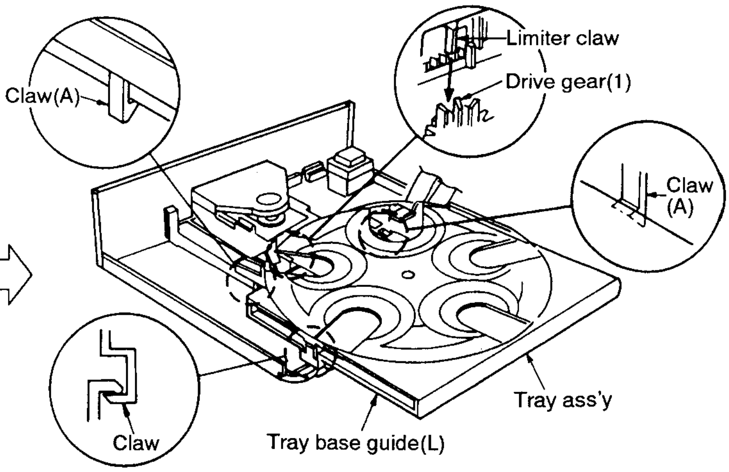
■ Positioning of the drive cam


Drive cam
Drive gear(1)
②
①
Pulley gear

1. Rotate the pulley gear to full position in the direction of arrow ①.
2. Then, rotate the pulley gear in the direction of arrow ②.
3. When the drive gear(1) stops rotating, turn off that pulley gear is rotating.

■ Installation of the tray ass'y


Tray ass'y
FPC board
Claw
Tray base guide(R)
CN403


Claw(A)
Limiter claw
Drive gear(1)
Claw (A)
Claw
Tray base guide(L)
Tray ass'y

1. Attach the FPC board to the connector(CN403).
2. Fit the claws on the right side of the tray ass'y underneath the claws on the tray base guide(R).
3. Fit the claws on the right side of the tray ass'y underneath the claws on the tray base guide(L).
4. Fit the limiter claw on the tray ass'y between the teeth of the drive gear(1).
5. Catch the 2 claws(A) with the loading mechanism ass'y.
6. After installing the tray ass'y, check that it moves smoothly.

HOW TO CHECK THE MAIN AND SERVO P.C.B.

1. Remove the cabinet. (See Ref.No.1 of the disassembly instructions.)
2. Remove the front panel ass'y. (See Ref.No.2 of the disassembly instructions.)
3. Remove the tray ass'y. (See Ref.No.5 of the disassembly instructions.)
4. Remove the cable holder. (See Ref.No.8 of the disassembly instructions.)
5. Remove the clamp plate ass'y. (See Ref.No.10 of the disassembly instructions.)
6. Remove the fixed plate, magnet and clamper. (See Ref.No.11 of the disassembly instructions.)

- **Check the main P.C.B.**

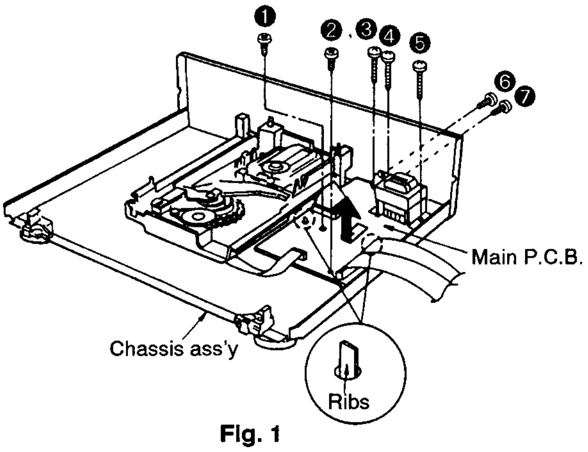

❶
❷, ❸ ❹ ❺
❻ ❼
Main P.C.B.
Chassis ass'y
Ribs

Fig. 1

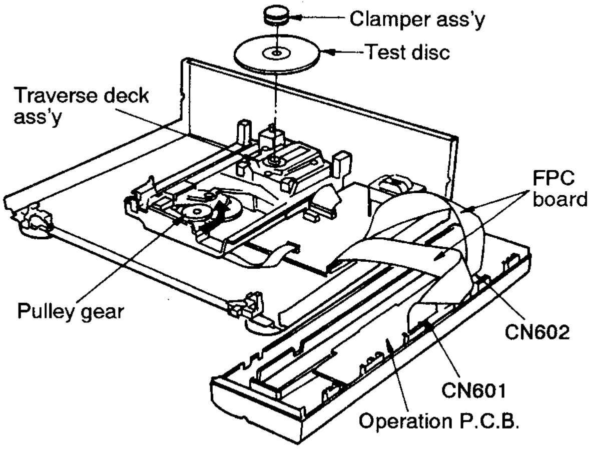
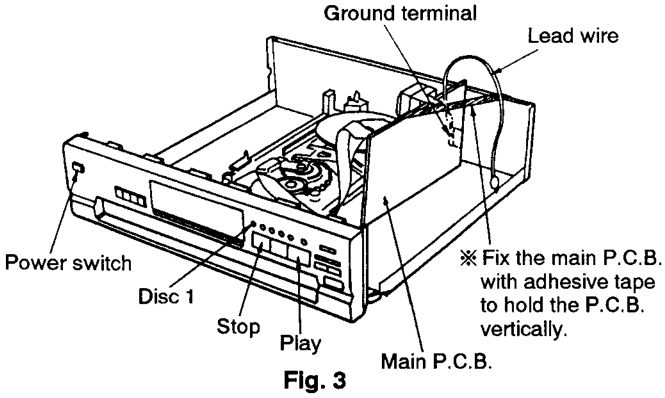

Clamper ass'y
Test disc
Traverse deck ass'y
FPC board
Pulley gear
CN602
CN601
Operation P.C.B.

Fig. 2

7. Remove the 7 screws(❶ ~ ❼).
8. Lift up the main P.C.B. to release the 2 ribs of chassis ass'y, and then remove the main P.C.B. in the direction of arrow.


Ground terminal
Lead wire
Power switch
Disc 1
Stop
Play
Main P.C.B.

※ Fix the main P.C.B. with adhesive tape to hold the P.C.B. vertically.

Fig. 3

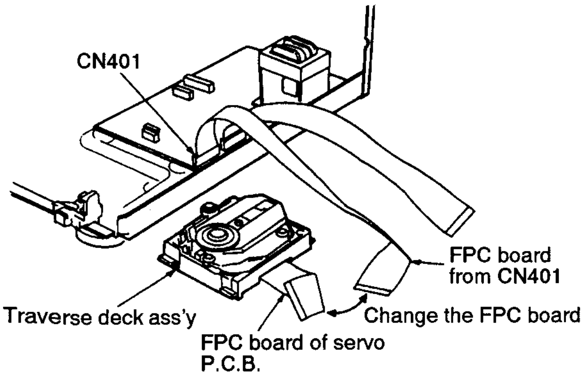
9. Rotate the pulley gear in the direction of arrow until traverse deck ass'y comes up.
10. Place the test disc and secure it by using the clamper ass'y.
11. Connect the 2 FPC board (CN601, CN602) as shown in Fig. 2.
12. Set up the main P.C.B.
13. Connect the main P.C.B. ground terminal (line out terminal) to the chassis ass'y with a lead wire.

How to play the disc

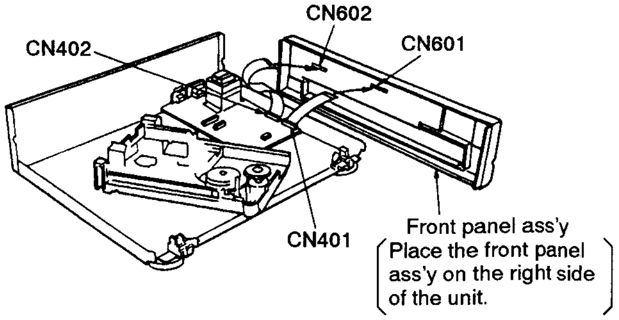
14. Set the unit in the test mode as follows:
[hold the play, stop and disc 1 keys(3 keys) on and set the power switch to ON.]
15. Press the play key and play the test disc.
16. When checking the soldered surface of the main P.C.B., do as shown in Fig. 3.

- **Check the servo P.C.B.**

7. Remove the loading mechanism ass'y. (See Ref.No.12 of the disassembly instructions.)
8. Remove the traverse deck ass'y. (See Ref.No.27 of the disassembly instructions.)

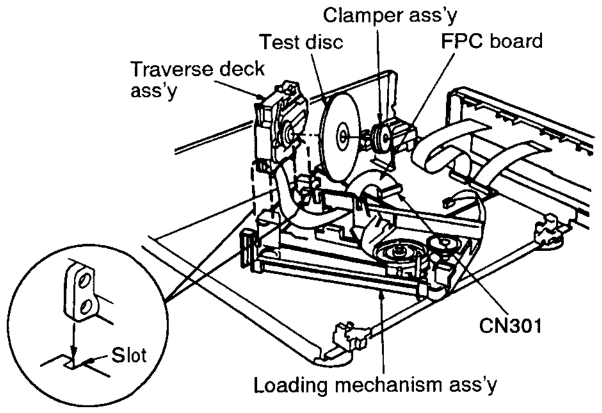

CN401
FPC board from CN401
Traverse deck ass'y
Change the FPC board
FPC board of servo P.C.B.

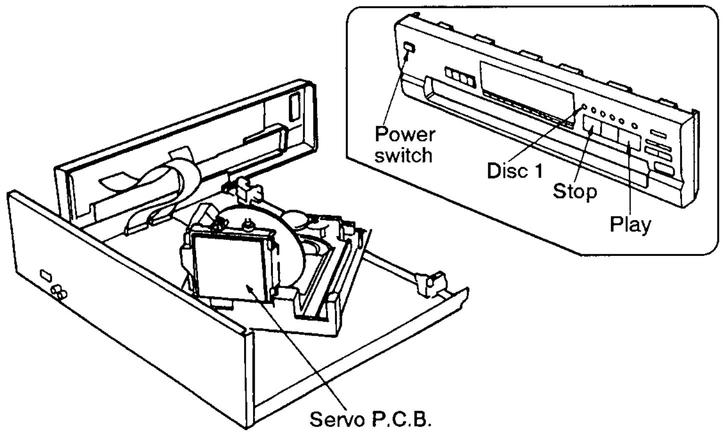
9. Replace the FPC board of servo P.C.B. to the FPC board (CN401) of main P.C.B.


CN602
CN402
CN601
CN401
Front panel ass'y

(Place the front panel ass'y on the right side of the unit.)

10. Connect the FPC boards as shown in above.
(Between CN401 and CN601
Between CN402 and CN602)





11. Insert the traverse deck in the slot of loading mechanism ass'y
12. Connect the FPC board of servo P.C.B. to the connector (CN301) of main P.C.B.
13. Set the test disc on the traverse deck ass'y, and then fix the traverse deck ass'y with clamper ass'y.

Notes:

- After completing the check, restore the replaced FPC boards to their original positions.

How to play the disc

14. Set the unit in the test mode as follows:
    [hold the play, stop and disc 1 keys(3 keys) on and set the power switch to ON.]
15. Press the play key and play the test disc.
16. When checking the soldered surface of the servo P.C.B., do as shown in above.

OPERATIING THE UNIT WITHOUT THE FRONT PANEL ASS'Y

(OPERATION P.C.B. AND KEYS)

A Turning off the back-up power to the microprocessor(IC 401)

1. Unplug the AC lead.
2. Short the ends of the C401 jumpers at 10 Ω (5W) resistance for at least 1 second.

B Turning the power on again

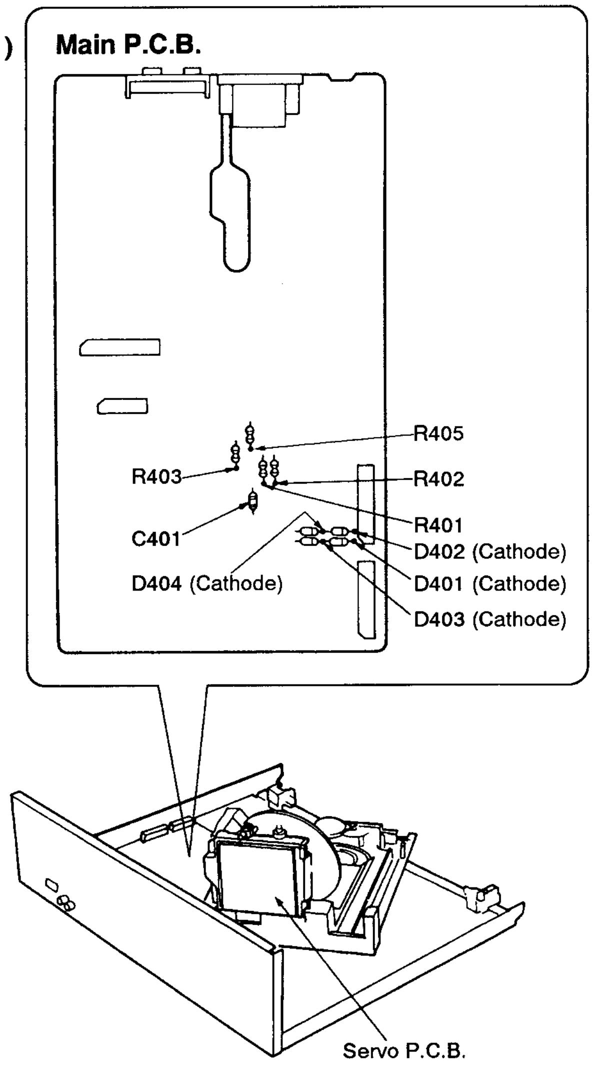
1. Plug the AC lead back in.
2. Short the between the following jumpers simultaneously:
   - The D401 cathode and R401 from IC401 (equivalent to pressing the STOP button).
   - The D401 cathode and R403 from IC401 (equivalent to pressing the PLAY button).
   - The D402 cathode and R401 from IC401 (equivalent to pressing the DISC 1 button).
3. Keeping the above shorts in place, short between the D404 cathode and R405 from IC401 for 1 second to turn on the power to the main unit.
4. Remove the shorts placed in step 2.

C Using the machine

- To play, short between the D401 cathode and R403 from IC401 (equivalent to pressing the PLAY button).
- To pause, short between the D401 cathode and R402 from IC401 (equivalent to pressing the PAUSE button).
- To stop, short between the D401 cathode and R401 from IC401 (equivalent to pressing the STOP button).
- To move forward, short between the D402 cathode and R402 from IC401 (equivalent to pressing the F.SKIP button).
- To move backward, short between the D402 cathode and R403 from IC401 (equivalent to pressing the R.SKIP button).
- To search in the forward direction, short between the D403 cathode and R402 from IC401 (equivalent to pressing the F.SEARCH button).
- To search in the backward direction, short between the D403 cathode and R403 from IC401 (equivalent to pressing the R.SEARCH button).

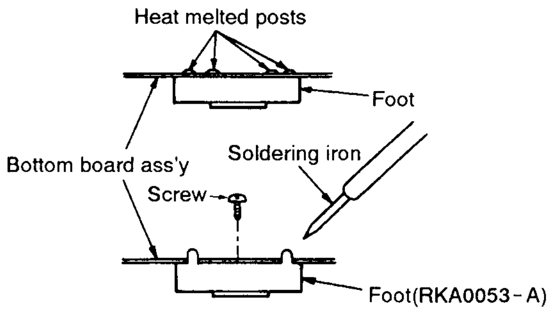
D Finishing off

1. Unplug the AC lead.
2. Short the ends of the C401 jumpers at 10 Ω (5W) resistance.



REPLACEMENT OF THE FOOT

1. Remove the 4 heat melted posts on the Bottom board ass'y with a pair of nippers or similar tool.
2. To replace the foot(RKA0053-A) on the Bottom board ass'y melt the 4 posts with a soldering iron or install it with a screw (XTB3+6J).



DISPLAY FUNCTION OF AUTOMATICALLY-ADJUSTED RESULTS

(SELF-CHECK FUNCTION)

The unit contains a function which displays the result of the automatically adjustment of the servo circuits (tracking, focus servo, etc.) as an error code on the FL display.
The error code display serves as a repair guide showing the automatically adjustment circuit is at fault. The procedures for displaying the error codes are given below.

• Procedures to display the error code

(1) Procedure to display the error code before disassembly (finished unit)

1. When the POWER key is pressed while holding down the STOP (■), PAUSE (▮▮) and PLAY (▶) keys simultaneously, the FL display illuminates, release the power turns on.
2. When the FL display illuminates, release the STOP (■), PAUSE (▮▮) and PLAY (▶) keys.
3. Press the OPEN/CLOSE (▲) key to open the disc tray and load the test disc (SZZP1054C).
4. Press the PLAY (▶) key to start the play operation.
5. After the time display appears, press the STOP (■) key to display the error code. (e.g. **E-0**)
6. The error code display can be used as a repair guide showing which servo circuit is at fault. (See Error Code Based Troubleshooting.)

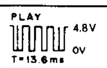
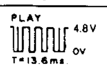
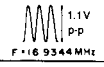
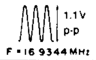
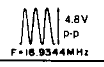
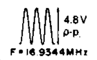
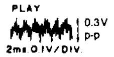
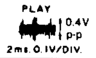
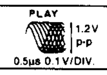
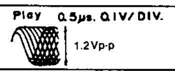
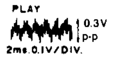
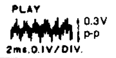
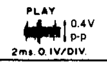
(2) Procedure to display the error code when disassembled

1. Prepare the unit as described in "How to Check the Main and Servo P.C.B." on pages 18, 19.
2. Press the POWER key while holding down the STOP (■), PLAY (▶) and DISC 1 keys simultaneously.
3. When the FL display illuminates, release the STOP (■), PLAY (▶) and DISC 1 keys.
4. Load the test disc (SZZP1054C) on the turntable and secure it with the clamper ass'y.
5. Perform steps 4 and 5 in section (1) above.

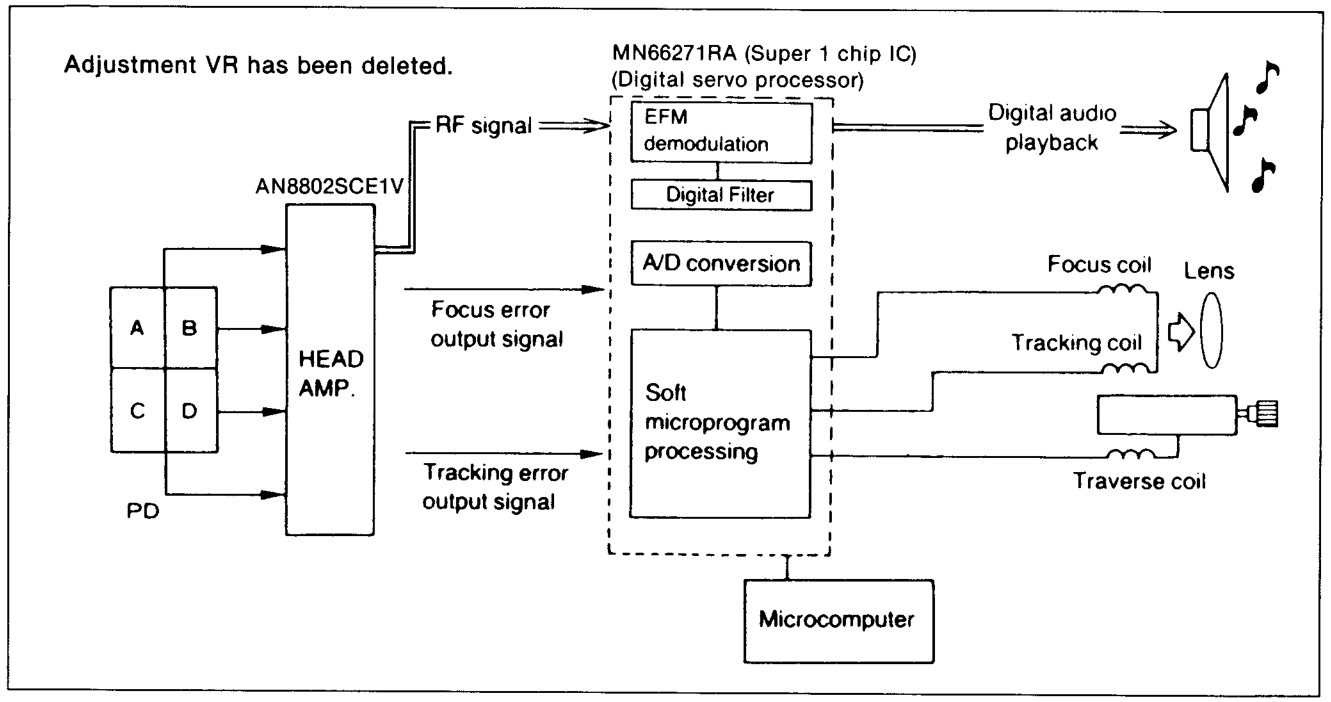
• Error code based troubleshooting

(Refer to next page.)

※The unit is satisfactory if the error code is **E-0** of **E-2**.
※Before testing, check that the test disc is free of scratches and dirt and optical pickup is clean.

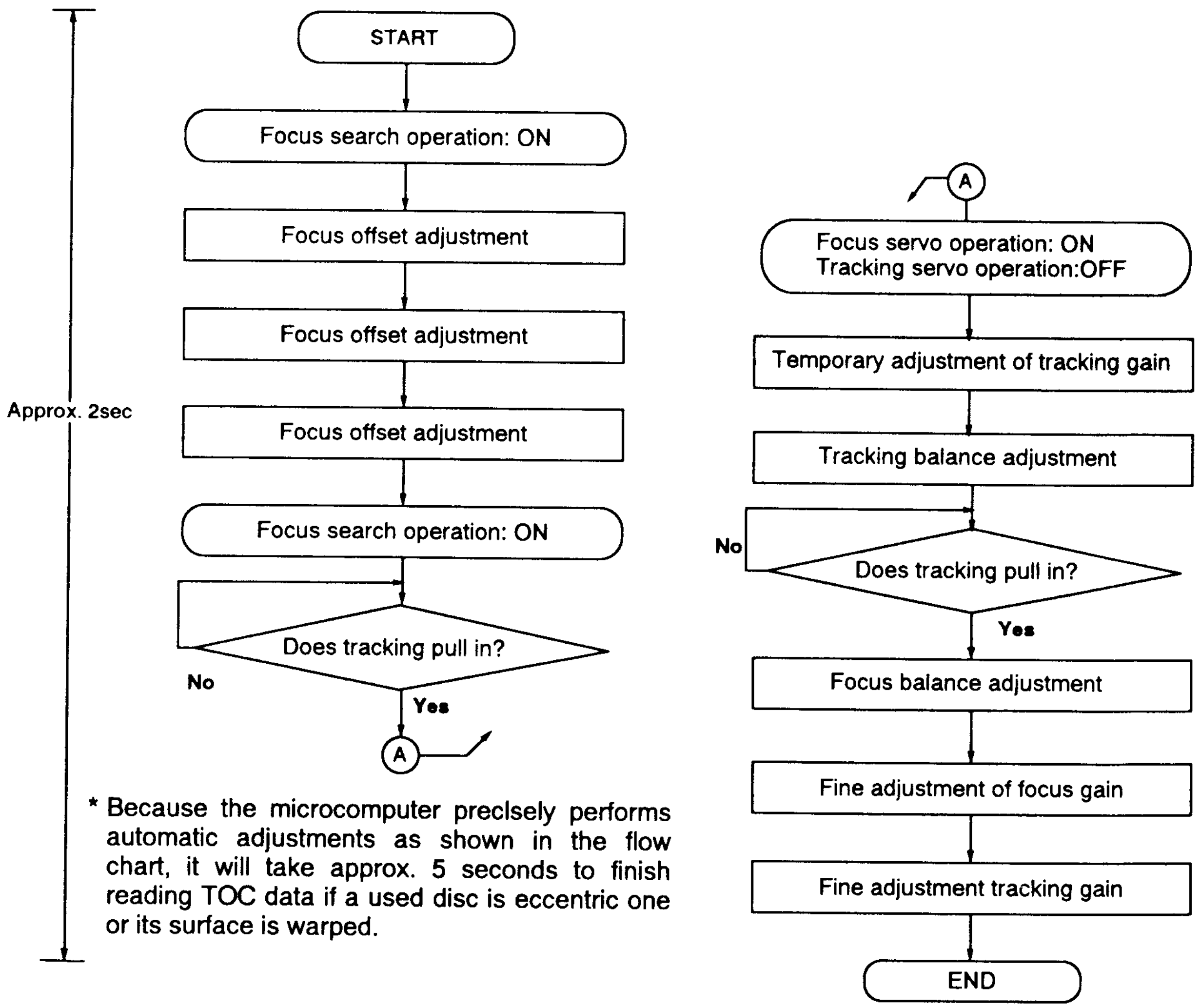
FL error code display	Symptom	Probable cause	Signal to check		Normal the values of voltage and waveform	
			Signal name	Location	PLAY	STOP
E-1	Focus and tracking offset adjustments did not complete in the specified time period.	① Clocks X1 and X2, power supply VDD, and reset/RST, all on IC702 ② MDATA, MCLK, MLD, and SENSE signals to/from the mechanism controller	MDATA	IC702 ⑧ pin		4.8V
			MCLK	IC702 ⑦ pin		4.8V
			MLD	IC702 ⑨ pin		
			SENSE	IC702 ⑩ pin	0V	0V
			/RST	IC702 ⑱ pin	4.9V	4.9V
			X1	IC702 (58) pin		
			X2	IC702 (59) pin		
E-3 E-5 E-7 E-9 E-B E-D E-F	Disc play unstable	① Scratches or contaminants on disc surface ② Focus and tracking servo circuits (check waveforms, voltages, and part constants.) ③ Spindle driver circuit ④ Optical pickup	FE	IC702 ㉜ pin		2.4V
			TE	IC702 ㉝ pin		2.4V
			FOD	IC702 ㉘ pin	2.4V	2.4V
			TRD	IC702 ㉗ pin	2.4V	2.4V
			KICK	IC702 ㉖ pin	2.4V	2.4V
			/FLOCK	IC702 ⑪ pin	0V	4.9V
			/RF DET	IC702 ㊳ pin	0V	4.8V
			RF	TJ701		3.4V
			STAT	IC702 ⑰ pin	3.5V	0V
E-4 E-6 E-C E-E	Best Eye (PD Balance) adjustment diode not comkplete in the specified time period.	① Scratches or contaminants on disc surface ② Focus and Tracking servo circuit (check waveforms, voltages, and part constants.) ③ Optical pickup	FBAL	IC702 ㉚ pin	2.5±1.25V	2.5±1.25V
			RF	TJ701		3.4V
			FE	IC702 ㉜ pin		0V
			/TLOCK	IC702 ⑫ pin	0V	0V
			OFT	IC702 ㊱ pin	0V	0V
E-8 E-A	Focus or Tracking gain adjustment did not complete in the specified time period.	① Scratches or contaminants on disc surface ② Focus and Tracking sérvo circuit (check waveforms, voltages, and part constants.) ③ Optical pickup	FE	IC702 ㉜ pin		2.4V
			TE	IC702 ㉝ pin		2.4V
			/TLOCK	IC702 ⑫ pin	0V	0V
			OFT	IC702 ㊱ pin	0V	0V

DIGITAL SERVO SYSTEM


Adjustment VR has been deleted.
MN66271RA (Super 1 chip IC)
(Digital servo processor)
RF signal
EFM demodulation
Digital Filter
A/D conversion
Soft microprogram processing
Digital audio playback
AN8802SCE1V
HEAD AMP.
A
B
C
D
PD
Focus error output signal
Tracking error output signal
Focus coil
Lens
Tracking coil
Traverse coil
Microcomputer

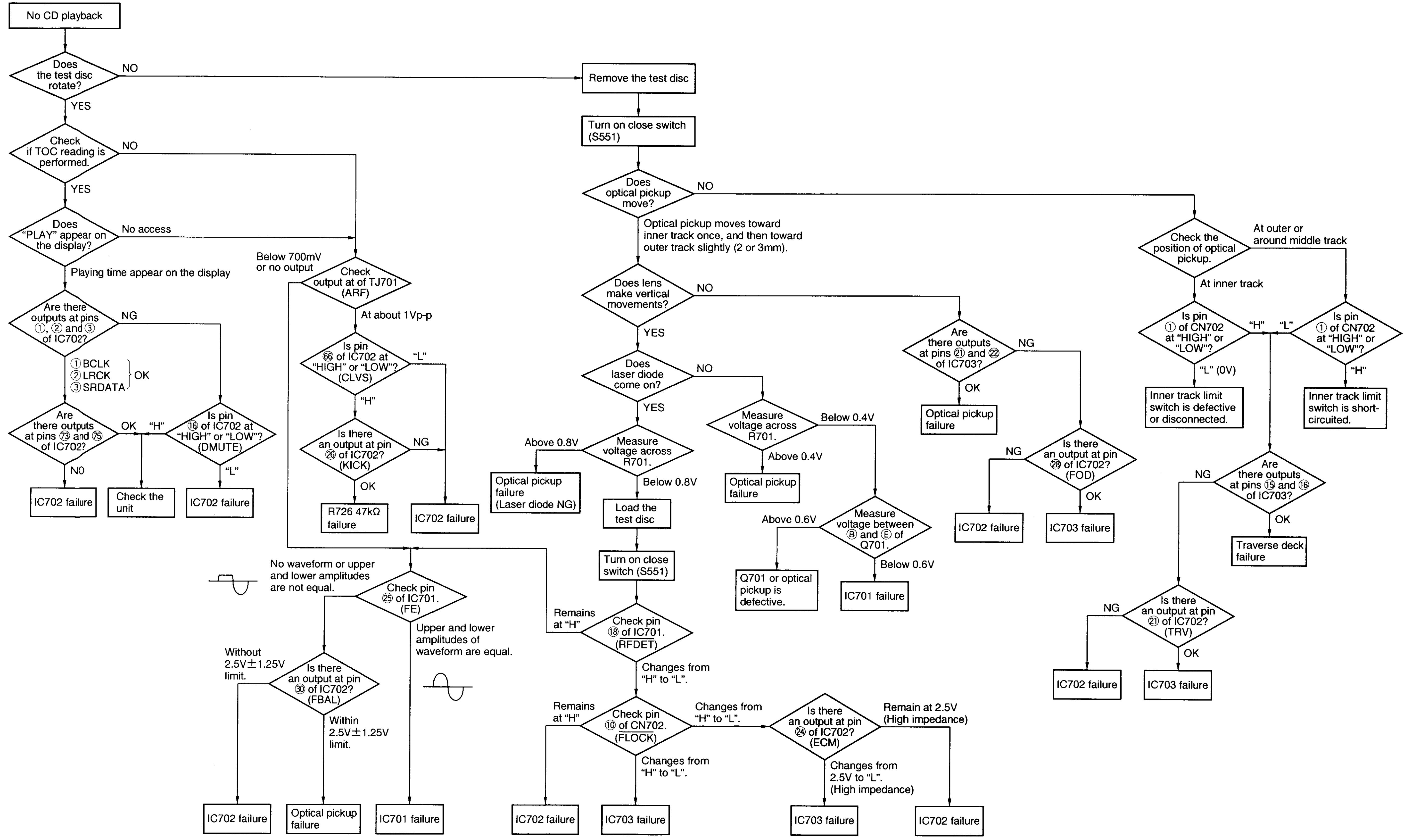
The following flow chart shows the sequence of automatic adjustments.

• Flow chart automatic adjustment sequence


START
Focus search operation: ON
Focus offset adjustment
Focus offset adjustment
Focus offset adjustment
Focus search operation: ON
Does tracking pull in?
No
Yes
A
Approx. 2sec
A
Focus servo operation: ON
Tracking servo operation:OFF
Temporary adjustment of tracking gain
Tracking balance adjustment
No
Does tracking pull in?
Yes
Focus balance adjustment
Fine adjustment of focus gain
Fine adjustment tracking gain
END

* Because the microcomputer preclsely performs automatic adjustments as shown in the flow chart, it will take approx. 5 seconds to finish reading TOC data if a used disc is eccentric one or its surface is warped.

■TROUBLESHOOTING GUIDE


No CD playback
Does the test disc rotate?
NO
YES
Remove the test disc
Turn on close switch (S551)
Check if TOC reading is performed.
NO
YES
Does "PLAY" appear on the display?
No access
Playing time appear on the display
Are there outputs at pins ①, ② and ③ of IC702?
NG
① BCLK
② LRCK
③ SRDATA
OK
Are there outputs at pins ⑦③ and ⑦⑤ of IC702?
OK
"H"
NO
Is pin ⑯ of IC702 at "HIGH" or "LOW"? (DMUTE)
"L"
IC702 failure
Check the unit
IC702 failure
Below 700mV or no output
Check output at of TJ701 (ARF)
At about 1Vp-p
Is pin ⑥⑥ of IC702 at "HIGH" or "LOW"? (CLVS)
"L"
"H"
Is there an output at pin ㉖ of IC702? (KICK)
NG
OK
R726 47kΩ failure
IC702 failure
No waveform or upper and lower amplitudes are not equal.
Check pin ㉕ of IC701. (FE)
Upper and lower amplitudes of waveform are equal.
Without 2.5V±1.25V limit.
Is there an output at pin ㉚ of IC702? (FBAL)
Within 2.5V±1.25V limit.
IC702 failure
Optical pickup failure
IC701 failure
Does optical pickup move?
NO
Optical pickup moves toward inner track once, and then toward outer track slightly (2 or 3mm).
Does lens make vertical movements?
NO
YES
Does laser diode come on?
NO
YES
Above 0.8V
Measure voltage across R701.
Below 0.8V
Optical pickup failure (Laser diode NG)
Load the test disc
Turn on close switch (S551)
Remains at "H"
Check pin ⑱ of IC701. (RFDET)
Changes from "H" to "L".
Remains at "H"
Check pin ⑩ of CN702. (FLOCK)
Changes from "H" to "L".
Changes from "H" to "L".
IC702 failure
IC703 failure
Is there an output at pin ㉔ of IC702? (ECM)
Remain at 2.5V (High impedance)
Changes from 2.5V to "L". (High impedance)
IC703 failure
IC702 failure
Measure voltage across R701.
Below 0.4V
Above 0.4V
Optical pickup failure
Above 0.6V
Measure voltage between Ⓑ and Ⓔ of Q701.
Below 0.6V
Q701 or optical pickup is defective.
IC701 failure
Are there outputs at pins ㉑ and ㉒ of IC703?
NG
OK
Optical pickup failure
NG
Is there an output at pin ㉘ of IC702? (FOD)
OK
IC702 failure
IC703 failure
Check the position of optical pickup.
At outer or around middle track
At inner track
Is pin ① of CN702 at "HIGH" or "LOW"?
"H"
"L"
"L" (0V)
Inner track limit switch is defective or disconnected.
Is pin ① of CN702 at "HIGH" or "LOW"?
"H"
Inner track limit switch is short-circuited.
NG
Are there outputs at pins ⑮ and ⑯ of IC703?
OK
Traverse deck failure
NG
Is there an output at pin ㉑ of IC702? (TRV)
OK
IC702 failure
IC703 failure

■ MEASUREMENTS AND ADJUSTMENTS

Warning: This product uses a laser diode. Refer to caution statements on page 2.
ACHTUNG: • Die lasereinheit nicht zerlegen.
• Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

Measuring Instruments and Special Tools

∗ Test discs
1. Playability test disc (SZZP1054C)
2. Uneven test disc (SZZP1056C)

∗ Musical program disc (ordinary)
∗ Dual-beam oscilloscope with bandwidth of 30MHz or better (with EXT. trigger and 1:1 probe).
∗ Allen wrench (M2.0) (SZZP1101C)
∗ Lock paint (RZZ0L01)

PREPARATION

1. Remove the cabinet and front panel ass'y (refer to "disassembly instructions" Ref. No. 1, 2).
2. Set the power switch to ON and press the open/close key to close the loading drawer.
3. Press the play key and when the traverse deck reaches it's height position, set the power switch to OFF.
4. Remove the tray ass'y (refer to "disassembly instructions" Ref. No. 5).
5. Remove the clamp plate, fixed plate, magnet and clamper (refer to "disassembly instructions" Ref. No. 10, 11).
6. Place the test disc and secure it by using clamper ass'y. (Refer to Fig. 1)
   (refer to "disassembly instructions" Ref. No. 11).
7. Set the unit in the test mode as follows:
   (hold the **play**, **stop** and **disc 1** keys (3 keys) on and set the power switch to ON.)
8. Press the **play** key and play the test disc.
9. Follow the adjustment procedure.

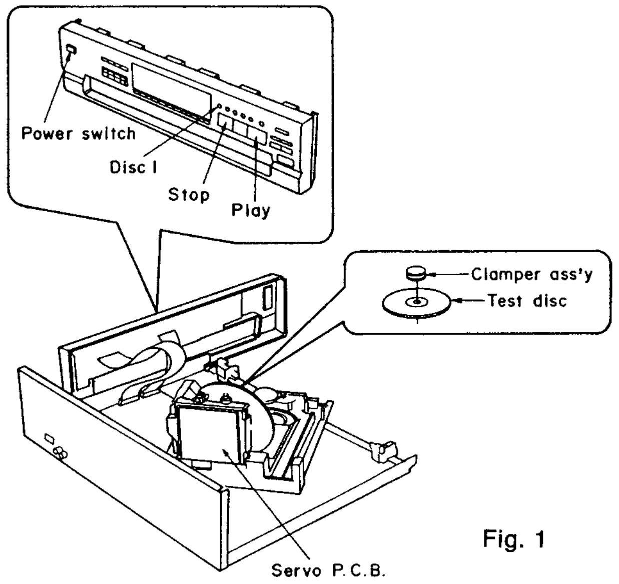
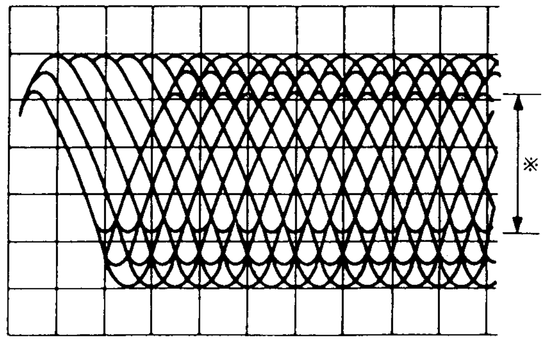


Fig. 1

(1) MECHANICAL ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across **TJ701** (+) and **TJ702** (VREF) on the servo P.C.B. (Refer to Fig. 3 on page 26)
   Oscilloscope setting: VOLT 200mV
   SWEEP .... 0.5μs.
   Input coupling...... AC
2. Switch the player power **ON**, and play track **19** on the test disc (SZZP1056C).
   (Playing any other track will prevent the HEX screws from being accessed.)
3. Leave the player in play mode and place it as shown Fig. 3.
4. Alternately adjust the two HEX screws with the 2.0mm allen wrench (SZZP1101C) until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched. (Refer to Fig. 2)
5. After completing the adjustment, lock the HEX screws with lock paint (RZZ0L01).



※ Most stretched eye pattern.

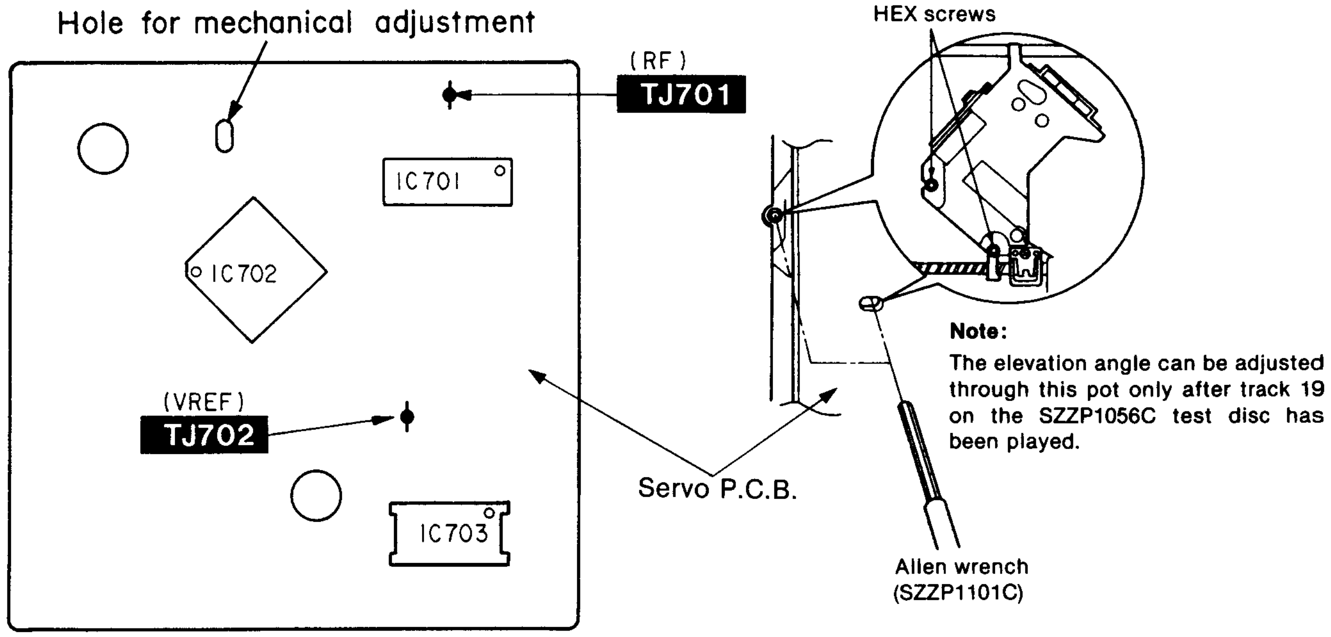
Fig. 2

(2) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

∗ **Checking Skip Search**
1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

∗ **Checking Manual Search**
1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

∗ **Checking Playability**
1. Play the 0.7mm black dot and the 0.7mm wedge on the playability test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc (SZZP1056C) and verify that no sound skip or noise occurs.



Note:
The elevation angle can be adjusted through this pot only after track 19 on the SZZP1056C test disc has been played.

Fig. 3

TERMINAL FUNCTION OF IC'S

• IC701 (AN8802SCE1V): Servo amp

Pin No.	Mark	I/O Division	Function
1	PDAD	I	Photo detector Bch input without delay
2	PDA	I	Photo detector Ach input without delay
3	LPD	I	Laser PD signal
4	LD	O	Laser power auto control output
5	AMPI	I	RF amp terminal
6	V_{CC}	I	Power supply terminal
7	AMPO	O	RF amp signal
8	CAGC	I	AGC detection capacitor input
9	ARF	O	RF signal
10	CENV	I	RF detect capacitor connection terminal
11	CEA	I	HPF-AMP capacitor connection terminal
12	GND	—	GND terminal
13	LDON	I	LD APC ON/OFF ("H": ON, "L": OFF)
14	TES	I	Tracking error shunt input ("H": shunt)
15	PLAY	I	Play signal ("H": ON, "L": OFF)
16	WVEL	I	Double velocity ("H": double, "L": single)
17	BDO	O	Dropout detection control
18	/RFDET	O	RF det. signal ("L": det.)
19	CROSS	O	Tracking error zero cross output
20	OFTR	O	Off track detection ("H": det.)
21	VDET	O	Oscillation det. signal ("H": det.)
22	ENV	O	Envelope output terminal
23	TEBPF	I	Oscillation detect input terminal (Not used, open)
24	TE	O	Tracking error signal
25	FE	O	Focusing error signal
26	PTO	O	Potention amp output
27	PTI	I	Potention amp input
28	TBAL	I	Tracking balance adj. input
29	FBAL	I	Focus balance adj. input
30	VREF	O	Reference voltage output
31	PDB	I	Photo detector Ach input with delay
32	PDBD	I	Photo detector Bch input with delay

• IC703 (AN8389SE1): Focus coil/tracking coil/traverse motor/spindle motor drive

Pin No.	Mark	I/O Division	Function
1	V_{CC}	I	Power supply terminal
2	VREF	I	Reference voltage input
3	IN4	I	Motor driver (4) input
4	IN3	I	Motor driver (3) input
5	GND	—	GND terminal
6	NC	—	Not used, connected to GND
7	NRESET	O	Reset terminal
8	GND	—	GND terminal
9	IN2	I	Motor driver (2) input
10	PC2	I	PC2 (power cut) input
11	IN1	I	Motor driver (1) input
12	PC1	I	PC1 (power cut) input (Not used, open)
13	$PV_{CC}1$	I	Driver power supply (1)
14	PGND1	—	Driver GND terminal (1)
15	D1−	O	Motor driver (1) output terminal (−)
16	D1+	O	Motor driver (1) output terminal (+)
17	D2−	O	Motor driver (2) output terminal (−)
18	D2+	O	Motor driver (2) output terminal (+)
19	D3−	O	Motor driver (3) output terminal (−)
20	D3+	O	Motor driver (3) output terminal (+)
21	D4−	O	Motor driver (4) output terminal (−)
22	D4+	O	Motor driver (4) output terminal (+)
23	PGND2	—	Driver GND terminal (2)
24	$PV_{CC}2$	I	Driver power supply (2)

- **IC702 (MN66271RA): Servo processor/Digital signal processor/Digital filter/D/A converter**

Pin No.	Mark	I/O Division	Function
1	BCLK	O	Serial bit clock terminal
2	LRCK	O	L/R discriminating signal
3	SRDATA	O	Serial data (Not used, open)
4	$DV_{DD}1$	I	Power supply (digital circuit) terminal
5	$DV_{SS}1$	—	GND (digital circuit) terminal
6	TX	O	Digital audio interface signal
7	MCLK	I	Command clock signal
8	MDATA	I	Command data signal
9	MLD	I	Command load signal ("L": LOAD)
10	SENSE	O	Sense signal (OFT, FESL, NACEND, NAJEND, POSAD, SFG)
11	/FLOCK	O	Optical servo condition (focus) ("L": lead-in)
12	/TLOCK	O	Optical servo condition (tracking) ("L": lead-in)
13	BLKCK	O	Sub-code block clock (f=75Hz) (Not used, open)
14	SQCK	I	Sub-code Q register clock
15	SUBQ	O	Sub-code Q data
16	DMUTE	I	Muting input ("H": MUTE) (Not used, connected to GND)
17	STAT	O	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQCK)
18	/RST	I	Reset signal ("L": reset)
19	SMCK	O	System clock (f=4.2336MHz) (Not used, open)
20	PMCK	O	Frequency division clock signal (Not used, open) $(f=\frac{1}{1.92}\times ck=88.2kHz)$
21	TRV	O	Traverse servo control
22	TVD	O	Traverse drive signal
23	PC	O	Turntable motor drive signal ("L": ON)
24	ECM	O	Turntable motor drive signal (Forced mode)
25	ECS	O	Turntable motor drive signal (Servo error signal)
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive signal output
28	FOD	O	Focus drive signal output
29	VREF	I	D/A drive output (TVD, ECS, TRD, FOD, FBAL, TBAL) normal voltage input terminal
30	FBAL	O	Focus balance adj. output (Not used, open)
31	TBAL	O	Tracking balance adj. output
32	FE	I	Focus error signal (analog input)
33	TE	I	Tracking error signal (analog input)
34	RFENV	I	RF envelope signal
35	VDET	I	Oscillation det. signal ("H": det.)
36	OFT	I	Off track signal ("H": Off track)
37	TRCRS	I	Track cross signal input
38	/RFDET	I	RF detection signal ("L": detection)
39	BDO	I	Dropout detection signal ("H": dropout)
40	LDON	O	Laser power control ("H": ON)
41	TES	O	Tracking error shunt output ("H": dropout)
42	PLAY	O	Play signal ("H": play)

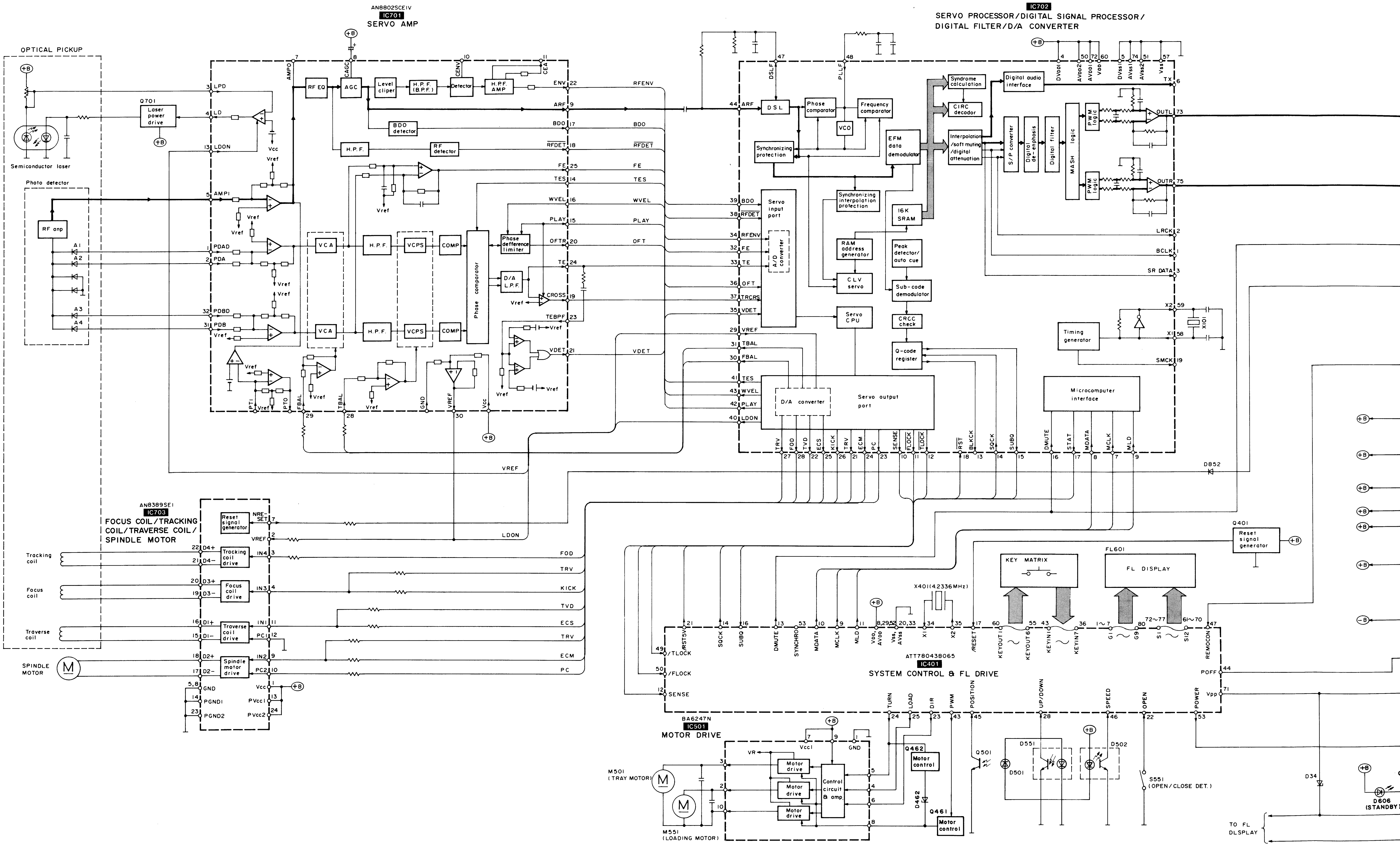
Pin No.	Mark	I/O Division	Function
43	WVEL	O	Double velocity status signal ("H": double)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	I	DSL bias terminal (Not used, open)
47	DSLF	I/O	DSL loop filter terminal
48	PLLF	I/O	PLL loop filter terminal
49	VCOF	I/O	VCO loop filter terminal (Not used, open)
50	$AV_{DD}2$	I	Power supply (analog circuit) terminal (2)
51	$AV_{SS}2$	—	GND (analog circuit) terminal
52	EFM	O	EFM signal (Not used, open)
53	PCK	O	PLL extract clock (f=4.3218MHz)
54	PDO	O	Phase comparated signal of EFM and PCK (Not used, open)
55	SUBC	O	Sub-code serial output data (Not used, open)
56	SBCK	I	Sub-code serial input clock (Not used, connected to GND)
57	V_{SS}	—	GND terminal
58	X1	I	Crystal oscillator terminal (f=16.9344MHz)
59	X2	O	
60	V_{DD}	I	Power supply terminal
61	BYTCK	O	Byte clock signal (Not used, open)
62	/CLDCK	O	Sub-code frame clock signal (f CLDCK=7.35kHz: Normal) (Not used, open)

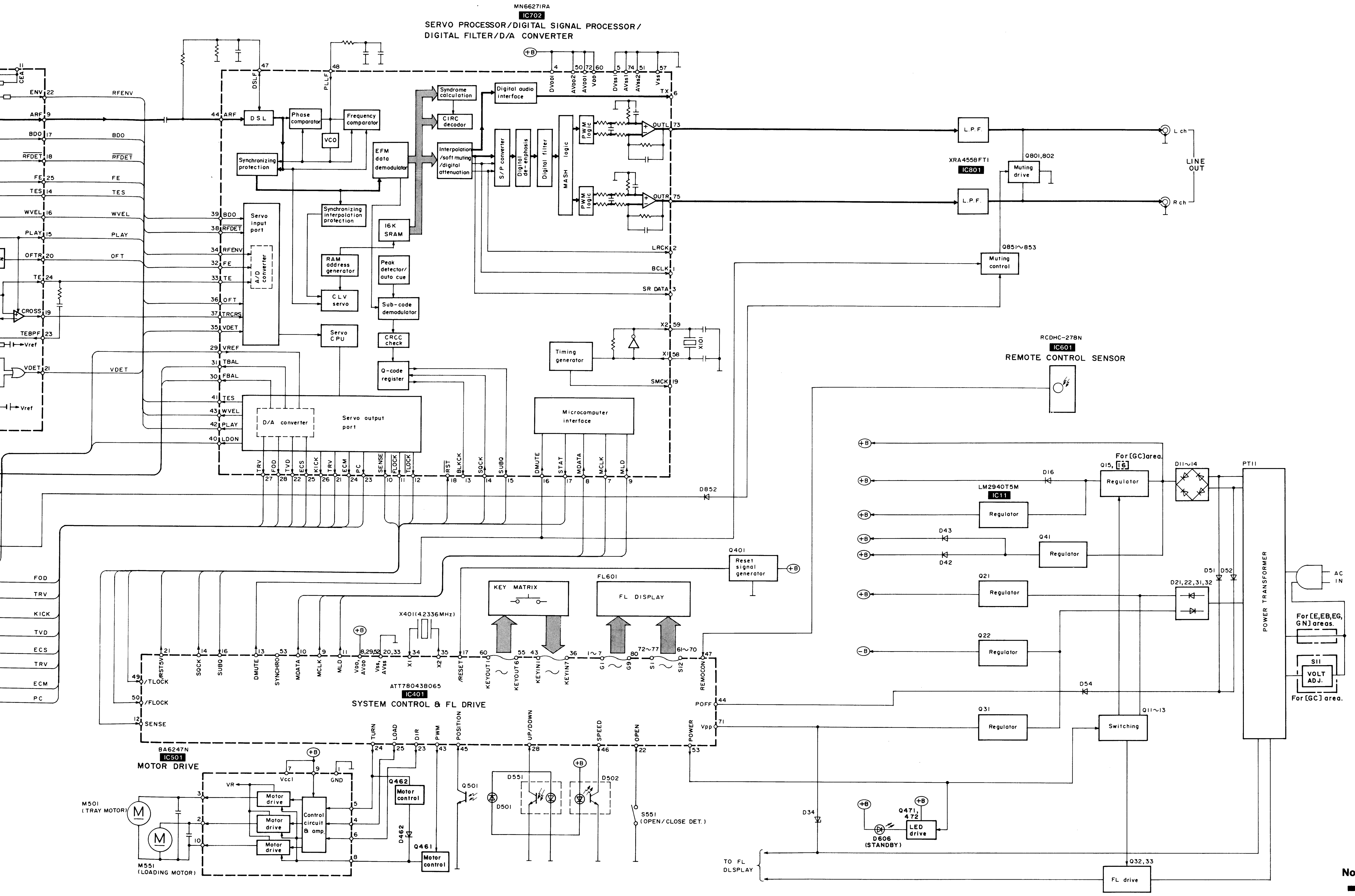
Pin No.	Mark	I/O Division	Function
63	FCLK	O	Crystal frame clock (Not used, open)
64	IPFLAG	O	Interpolation flag terminal
65	FLAG	O	Flag terminal
66	CLVS	O	Turntable servo phase synch. signal ("H": CLV, "L": Rough servo) (Not used, open)
67	CRC	O	Sub-code CRC check terminal ("H": OK, "L": NG)
68	DEMPH	O	De-emphasis ON signal ("H": ON) (Not used, open)
69	RESY	O	Re-synchronizing signal of frame sync. (Not used, open)
70	/RST2	I	Reset terminal after "MASH" circuit
71	/TEST	I	Test terminal (Normal: "H")
72	$AV_{DD}1$	I	Power supply (analog circuit) terminal (1)
73	OUTL	O	Lch audio signal
74	$AV_{SS}1$	—	GND (analog circuit) terminal (1)
75	OUTR	O	Rch audio signal
76	RSEL	I	Polarity direction control terminal of RF signal
77	CSEL	I	Frequency control terminal of crystal oscillator (Not used, connected to GND)
78	PSEL	I	Test terminal (Normal: "L")
79	MSEL	I	"SMCK" terminal frequency select ("L": SMCK=4.2336MHz)
80	SSEL	I	"SUBQ" terminal mode select ("H": Q code buffer)

• IC401 (ATT78043B065): System control & FL drive

Pin No.	Mark	I/O Division	Function
1〜7	G7〜G1	O	Grid signal of FL display
8	VDD	I	Power supply terminal
9	MCLK	O	Command clock signal
10	MDATA	O	Command data signal
11	MLD	O	Command load signal ("L" LOAD)
12	SENSE	I	Sense signal
13	DMUTE	O	Muting control signal
14	SQCK	O	Sub-code Q register clock
15	NC	—	Not connected
16	SUBQ	I	Sub-code Q data
17	/RESET	I	Reset signal input
18	ZSENSE	—	Not used, connected to GND
19	REC. EN	I	Synchro. rec. control terminal
20	AVSS	—	GND terminal
21	/RSTSV	O	Reset signal output
22	OPEN	I	Open detect terminal
23	DIR	O	Motor control signal
24	TRUN	O	
25	LOAD	O	Motor control signal
26	DAC	O	Not used, open
27	RESTSW	I	Rest position de
28	UP/DOWN	I	Traverse deck up/down det. terminal
29	AVDD	I	Power supply terminal
30	AVREF	I	Power supply terminal
31	XT1	—	Not used, connected to GND
32	XT2	—	Not used, open
33	VSS	—	GND terminal
34	X1	I	Crystal Osc terminal (F: 4.2336 MHz)
35	X2	O	
36〜42	KEYIN 7〜KEYIN 1	I	Key return signal
43	PWM	O	Motor control signal
44	POFF	I	Power det. terminal
45	POSITION	I	Rotary tray position det. terminal
46	SPEED	I	Loading motor speed sensor signal
47	REMOCON	I	Remote control signal input
48	IC	—	Not used, connected to GND
49	/TLOCK	I	Optical servo condition (tracking) input
50	/FLOCK	I	Optical servo condition (focus) input
51	STAT	I	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQCK)
52	VDD	I	Power supply terminal
53	POWER	O	Power ON/OFF output terminal
54	SYNCHRO	—	Not used, open
55〜60	KEYOUT 6〜KEYOUT 1	O	Key scan signal
61〜70	S16〜S7	O	Segment signal of FL display
71	VPP	I	Power supply terminal
72〜77	S6〜S1	O	Segment signal of FL display
78	EXDATA	O	Not used, open
79	EXCLK	O	Not used, open
80	G8	O	Grid signal of FL display

BLOCK DIAGRAM


AN8802SCEIV
IC701
SERVO AMP
OPTICAL PICKUP
Semiconductor laser
Photo detector
RF amp
A1
A2
A3
A4
Q701
Laser power drive
LPD
LD
LDON
AMPI
PDAD
PDA
PDBD
PDB
RF EQ
AGC
Level cliper
H.P.F. (B.P.F.)
Detector
H.P.F. AMP
BDO detector
H.P.F.
RF detector
VCA
VCPS
COMP
Phase comparator
Phase defference limiter
D/A L.P.F.
AMPO
CAGC
CENV
CEA
ENV
ARF
BDO
RFDET
FE
TES
WVEL
PLAY
OFTR
TE
CROSS
TEBPF
VDET
PTI
PTO
FBAL
TBAL
GND
VREF
Vcc
Vref
RFENV
OFT
VREF
LDON
MN6627IRA
IC702
SERVO PROCESSOR/DIGITAL SIGNAL PROCESSOR/ DIGITAL FILTER/D/A CONVERTER
DSLF
PLLF
DSL
Phase comparator
VCO
Frequency comparator
Synchronizing protection
EFM data demodulator
Syndrome calculation
CIRC decodor
Digital audio interface
Interpolation /soft muting /digital attenuation
S/P converter
Digital de-enphasis
Digital filter
MASH logic
PWM logic
Synchronizing interpolation protection
16K SRAM
RAM address generator
CLV servo
Peak detector/ auto cue
Sub-code demodulator
CRCC check
Q-code register
Servo CPU
Servo input port
A/D converter
D/A converter
Servo output port
Timing generator
Microcomputer interface
DVDD
AVDD2
AVDD1
VDD
DVSS
AVSS1
AVSS2
VSS
TX
OUTL
OUTR
LRCK
BCLK
SR DATA
X2
X1
SMCK
X101
RFENV
TRCRS
VDET
TBAL
FBAL
LDON
TRV
FOD
TVD
ECS
KICK
ECM
PC
SENSE
FLOCK
TLOCK
RST
BLKCK
SQCK
SUBQ
DMUTE
STAT
MDATA
MCLK
MLD
D852
AN8389SE1
IC703
FOCUS COIL/TRACKING COIL/TRAVERSE COIL/ SPINDLE MOTOR
Reset signal generator
NRESET
Tracking coil drive
Focus coil drive
Traverse coil drive
Spindle motor drive
Tracking coil
Focus coil
Traverse coil
SPINDLE MOTOR
D4+
D4-
D3+
D3-
D1+
D1-
D2+
D2-
GND
PGND1
PGND2
IN4
IN3
IN1
PC1
IN2
PC2
Vcc
PVcc1
PVcc2
Q401
Reset signal generator
KEY MATRIX
FL601
FL DISPLAY
X401(4.2336MHz)
ATT780438065
IC401
SYSTEM CONTROL & FL DRIVE
/RST5V
/TLOCK
/FLOCK
SENSE
SQCK
SUBQ
DMUTE
SYNCHRO
MDATA
MCLK
MLD
VDD, AVDD
Vss, AVss
X1
X2
/RESET
KEYOUT1
KEYOUT6
KEYIN1
KEYIN7
G1
G9
S1
S12
REMOCON
POFF
Vpp
TURN
LOAD
DIR
PWM
POSITION
UP/DOWN
SPEED
OPEN
POWER
BA6247N
IC501
MOTOR DRIVE
M501 (TRAY MOTOR)
M551 (LOADING MOTOR)
VR
Vcc1
Motor drive
Control circuit & amp.
Q462
Motor control
D462
Q461
Motor control
Q501
D501
D551
D502
S551 (OPEN/CLOSE DET.)
D34
D606 (STANDBY)
TO FL DLSPLAY
+B
-B


MN6627IRA
IC702
SERVO PROCESSOR/DIGITAL SIGNAL PROCESSOR/
DIGITAL FILTER/D/A CONVERTER
CEA
ENV 22
RFENV
ARF 9
BDO 17
RFDET 18
FE 25
TES 14
WVEL 16
PLAY 15
OFTR 20
OFT
TE 24
CROSS 19
TEBPF 23
Vref
VDET 21
VDET
DSLF
PLLF
DSL
Phase comparator
Frequency comparator
VCO
Synchronizing protection
EFM data demodulator
Syndrome calculation
CIRC decoder
Interpolation /soft muting /digital attenuation
Digital audio interface
S/P converter
Digital de-emphasis
Digital filter
MASH logic
PWM logic
OUTL 73
OUTR 75
TX 6
LRCK 2
BCLK 1
SR DATA 3
X2 59
X1 58
X101
SMCK 19
Timing generator
Synchronizing interpolation protection
16K SRAM
RAM address generator
Peak detector/ auto cue
CLV servo
Sub-code demodulator
Servo CPU
CRCC check
Q-code register
Servo input port
A/D converter
Servo output port
D/A converter
Microcomputer interface
39 BDO
38 RFDET
34 RFENV
32 FE
33 TE
36 OFT
37 TRCRS
35 VDET
29 VREF
31 TBAL
30 FBAL
41 TES
43 WVEL
42 PLAY
40 LDON
DVDD1 4
AVDD2 50
AVDD1 72
VDD 60
DVSS1 5
AVSS1 74
AVSS2 51
VSS 57
TRV 27
FOD 28
TVD 22
ECS 25
KICK 26
TRV 21
CM 24
PC 23
SENSE 10
FLOCK 11
TLOCK 12
RST 18
BLKCK 13
SQCK 14
SUBQ 15
DMUTE 16
STAT 17
MDATA 8
MCLK 7
MLD 9
L.P.F.
L.P.F.
XRA4558FT1
IC801
Q801,802
Muting drive
L ch
R ch
LINE OUT
Q851~853
Muting control
D852
RCDHC-278N
IC601
REMOTE CONTROL SENSOR
FOD
TRV
KICK
TVD
ECS
TRV
ECM
PC
Q401
Reset signal generator
KEY MATRIX
FL601
FL DISPLAY
X401(4.2336MHz)
49 /TLOCK
50 /FLOCK
12 SENSE
RST5V 21
SQCK 14
SUBQ 16
DMUTE 13
SYNCHRO 53
MDATA 10
MCLK 9
MLD 11
VDD, AVDD 8,29,52
VSS, AVSS 20,33
X1 34
X2 35
/RESET 17
KEYOUT1 60
KEYOUT6 55
KEYIN1 43
KEYIN7 36
G1 1~7
G9 80
S1 72~77
S12 61~70
REMOCON 47
POFF 44
Vpp 71
ATT780438065
IC401
SYSTEM CONTROL & FL DRIVE
TURN 24
LOAD 25
DIR 23
PWM 43
POSITION 45
UP/DOWN 28
SPEED 46
OPEN 22
POWER 53
BA6247N
IC501
MOTOR DRIVE
Vcc1 7
9
GND 1
VR
Motor drive
Control circuit & amp.
M501 (TRAY MOTOR)
M551 (LOADING MOTOR)
Q462
Motor control
D462
Q461
Motor control
Q501
D501
D551
D502
S551 (OPEN/CLOSE DET.)
D34
D606 (STANDBY)
Q471, 472
LED drive
TO FL DLSPLAY
Q32,33
FL drive
+B
−B
For [GC] area.
Q15, [16]
Regulator
D16
LM2940T5M
IC11
Regulator
D43
D42
Q41
Regulator
Q21
Regulator
Q22
Regulator
Q31
Regulator
Q11~13
Switching
D11~14
D21,22,31,32
D51 D52
D54
PT11
POWER TRANSFORMER
AC IN
For [E,EB,EG, GN] areas.
S11
VOLT ADJ.
For [GC] area.

Note:

➡ Audio signal

SCHEMATIC DIAGRAM (Parts list on pages 48～51.)

(This schematic diagram may be modified at any time with development of new technology.)

Note:

- **S11** : Voltage adj. switch in "240V" position.
  〔For (GC) area only.〕
  (110V ↔ 127V ↔ 220V ↔ 240V)
- **S551** : Disc tray "Open/Close" detector switch.
- **S601** : Time mode (TIME MODE) switch.
- **S602** : Spiral (SPIRAL) switch.
- **S603** : Random mode (RANDOM MODE) switch.
- **S604** : Repeat (REPEAT) switch.
- **S607** : Stop (■) switch.
- **S608** : Pause (▮▮) switch.
- **S609** : Play (▶) switch.
- **S610～S614**: Disc (DISC 1～5) switches.
  〔S610: 1, S611: 2, S612: 3, S613: 4, S614: 5〕
- **S615** : Disc skip (DISC SKIP) switch.
- **S616** : Program mode (PROGRAM MODE) switch.
- **S617, 618** : Search (SEARCH) switches.
  〔S617: ◀◀, S618: ▶▶〕
- **S619, 620** : Skip (SKIP) switches.
  〔S619: ⏮, S620: ⏭〕
- **S621** : Loading drawer open/close
  (⏏ OPEN/CLOSE) switch.
- **S631** : Power "STANDBY ⏻ /ON"
  (POWER, STANDBY ⏻ ON) switch.
- **S651～S662**: Numeric (1～10, 0, > 10) switches.
  S651: (1), S652: (2), S653: (3), S654: (4),
  S655: (5), S656: (6), S657: (7), S658: (8),
  S659: (9), S660: (10), S661: (> 10), S662: (0)

- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.
  Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.

∗The parenthesized are the values of voltage generated during playing (Test disc 1kHz, L+R, 0dB), others are voltage values in stop mode.

- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used as occation calls. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
- The supply part number is described alone in the replacement parts.

Part No.	Production Part No.	Supply Part No.
IC11	LM2940T5M	LM2940T5

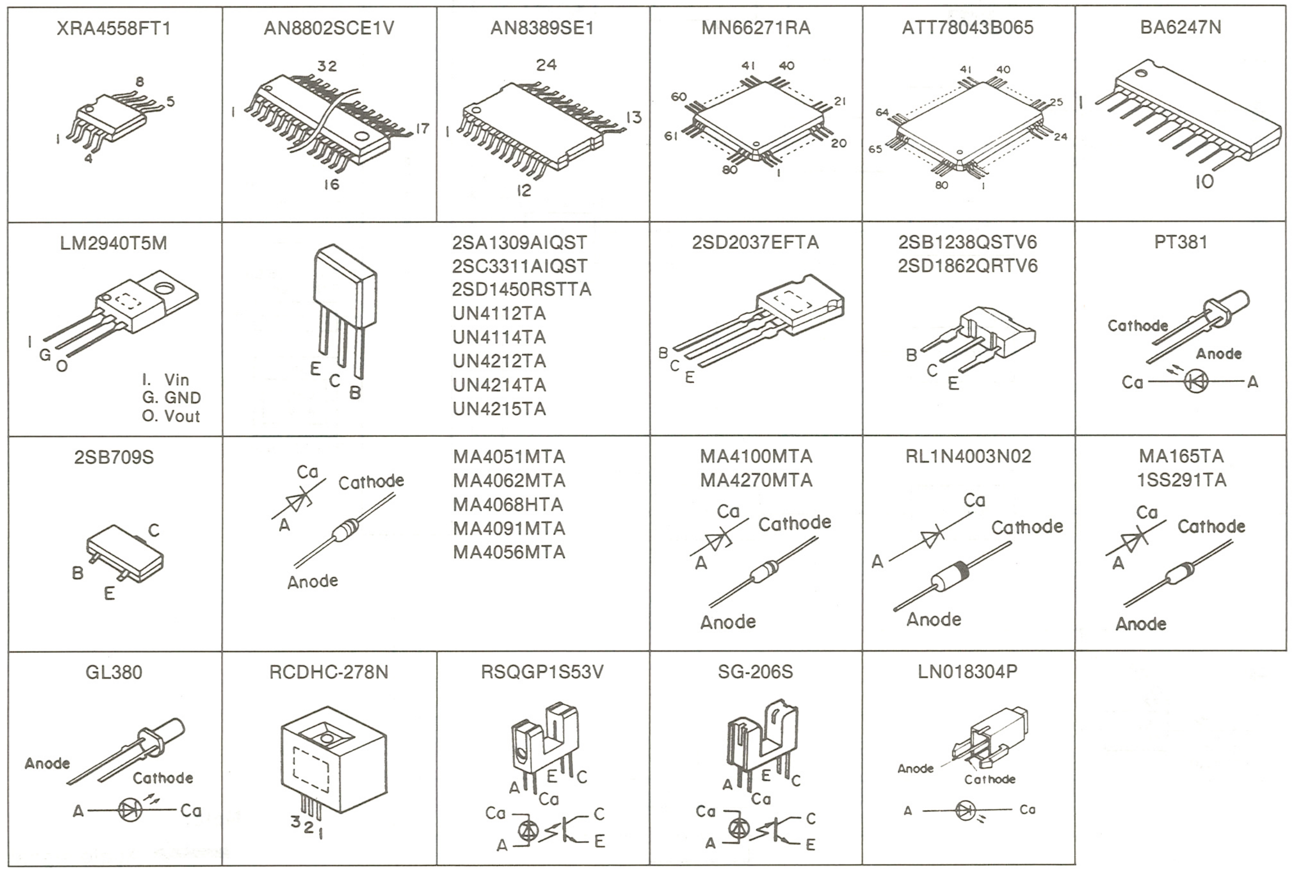
- ━━━ / ╍╍╍ : Positive voltage lines and negative voltage lines.
  ⇨ : audio signal lines.

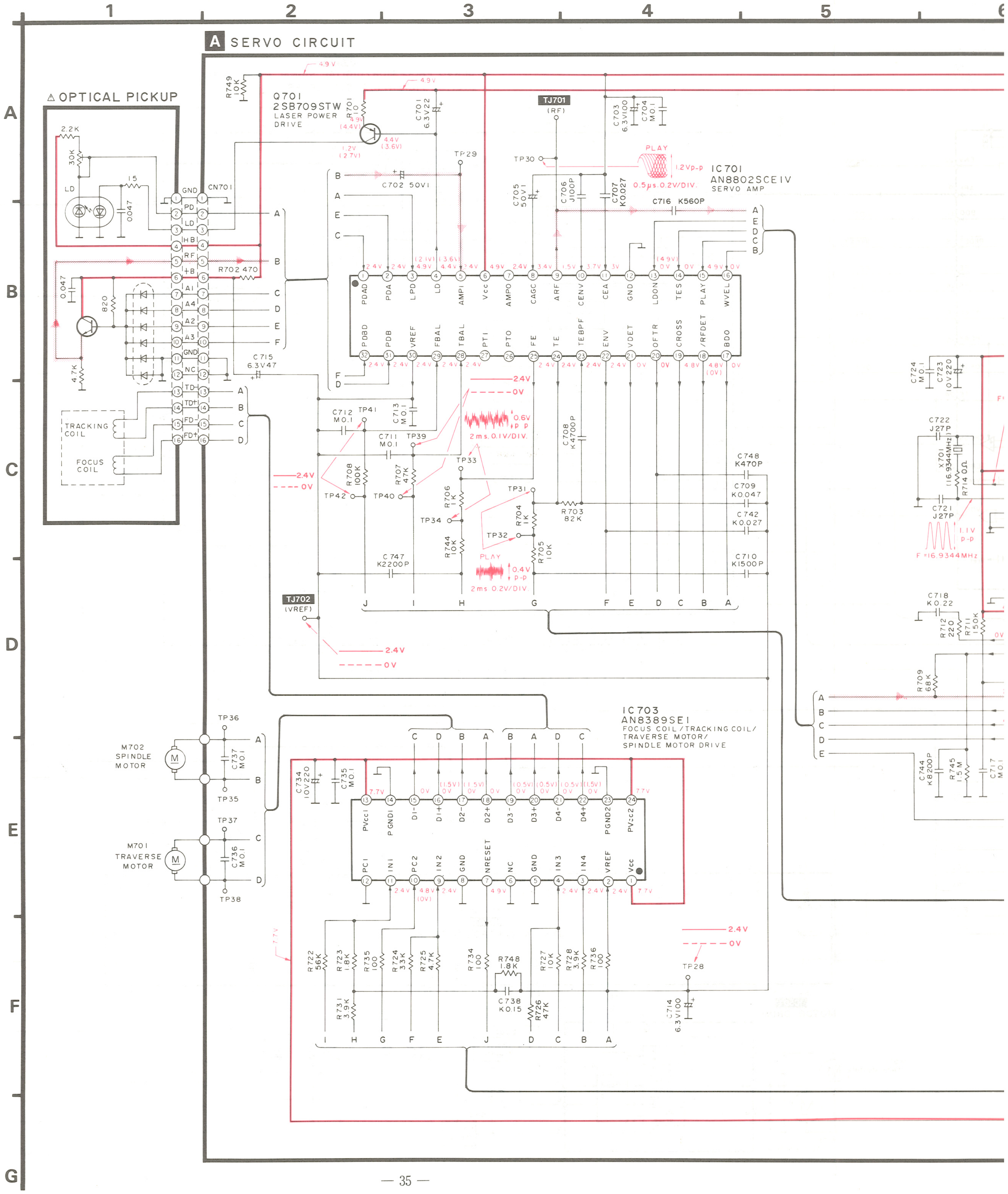
Caution!

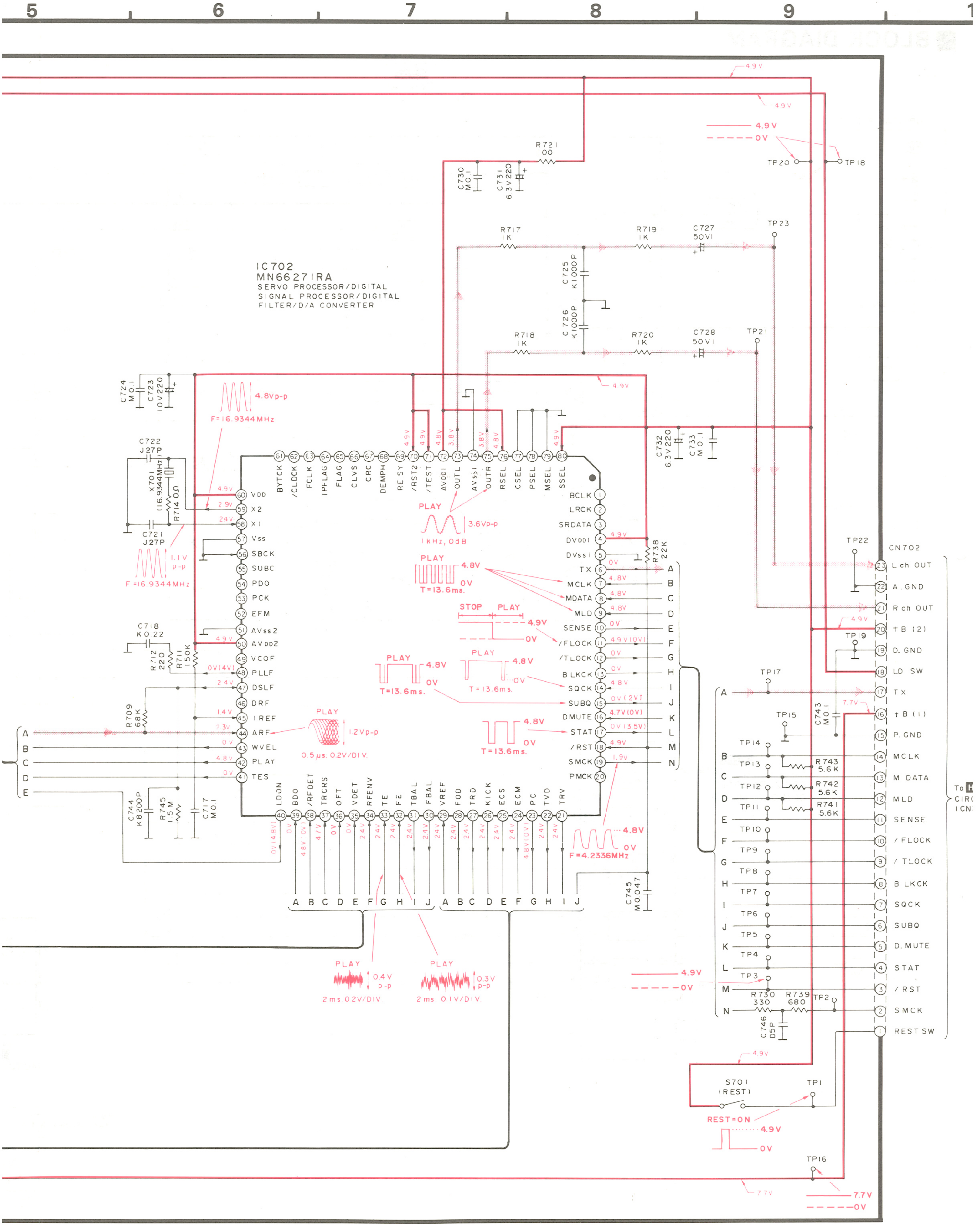
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

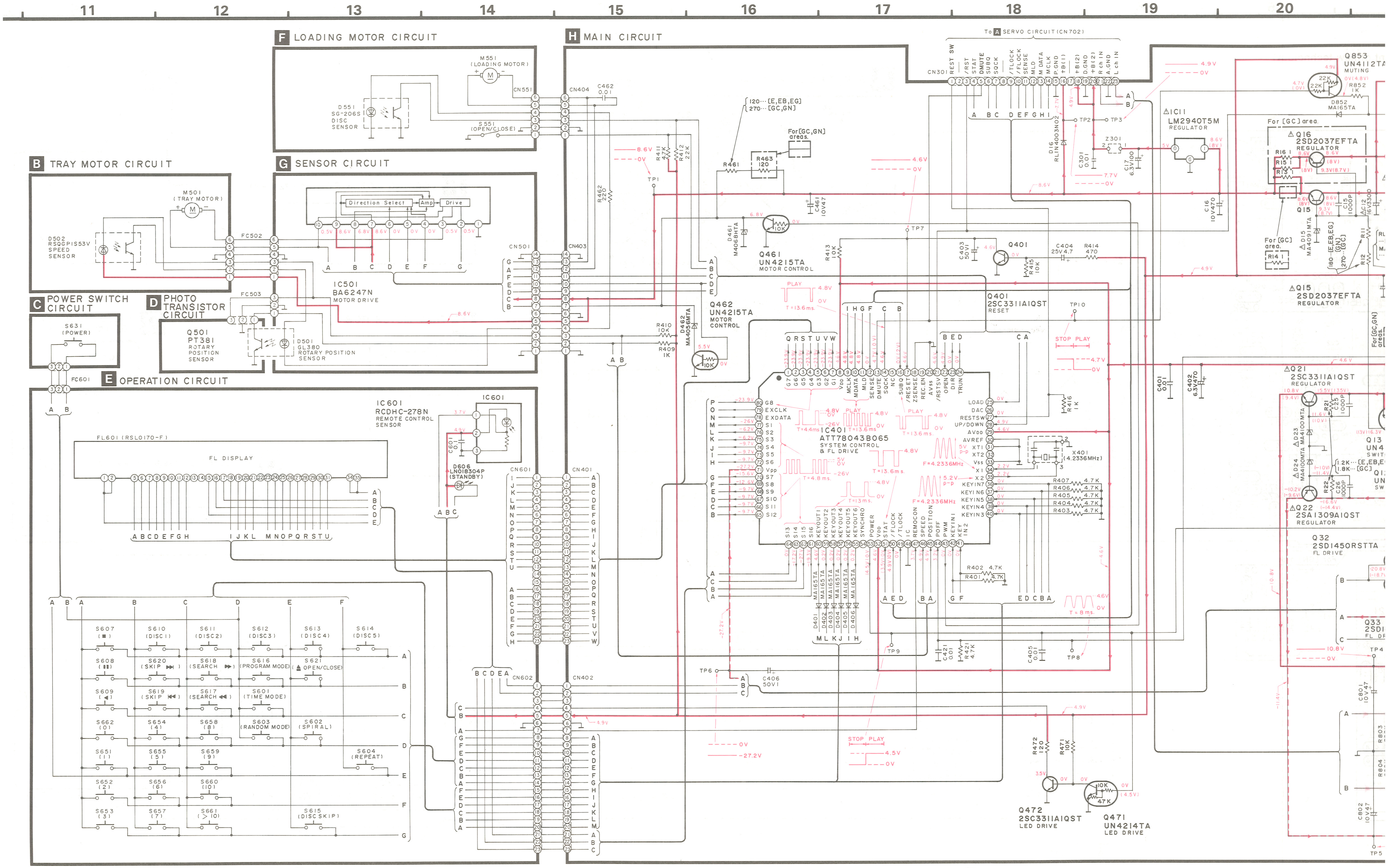
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.

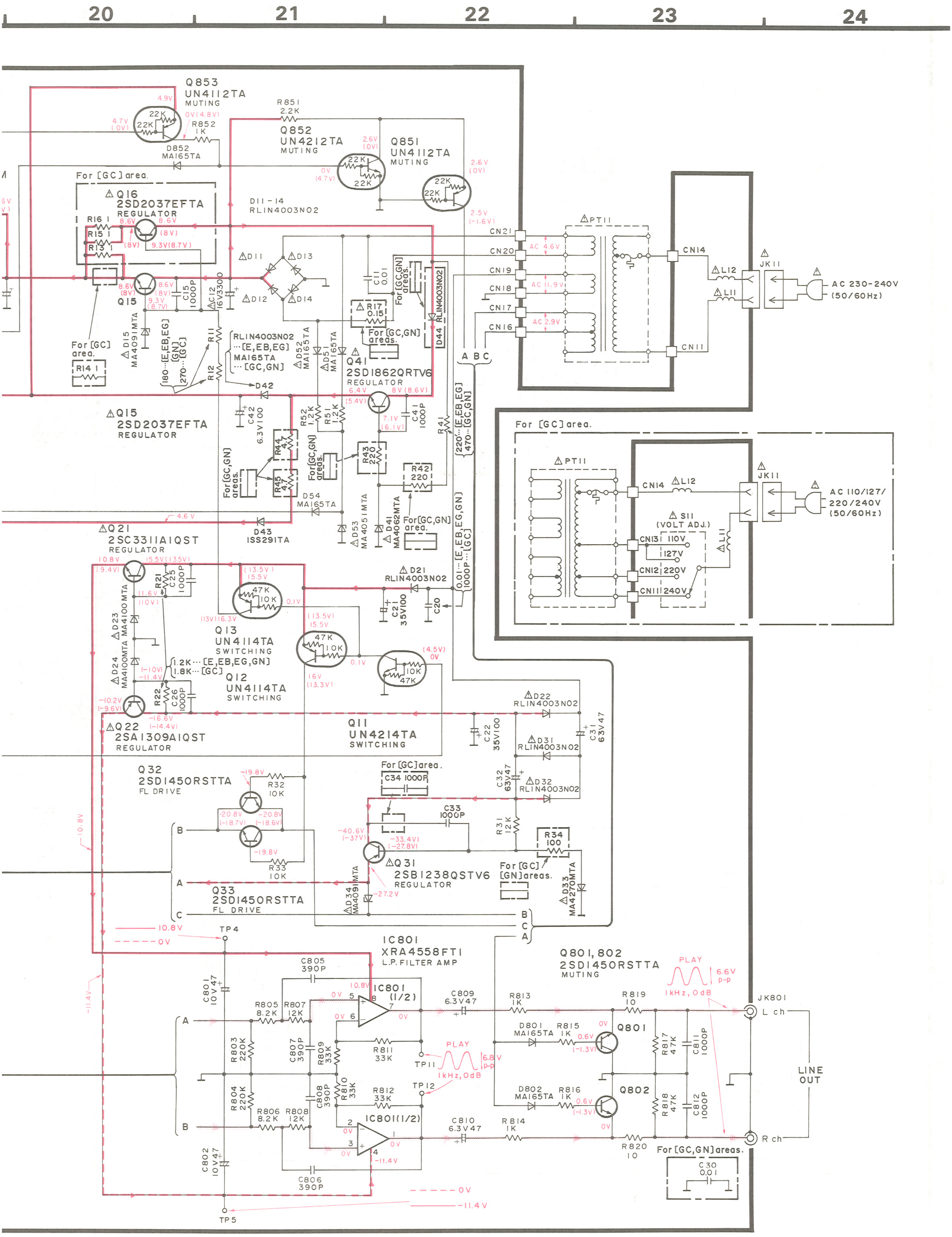
• Terminal guide of IC's, transistors and diodes.


XRA4558FT1
8
5
1
4
AN8802SCE1V
32
1
17
16
AN8389SE1
24
1
13
12
MN66271RA
41 40
60
21
61
20
80
1
ATT78043B065
41 40
64
25
65
24
80
1
BA6247N
1
10
LM2940T5M
I
G
O
I. Vin
G. GND
O. Vout
E C B
2SA1309AIQST
2SC3311AIQST
2SD1450RSTTA
UN4112TA
UN4114TA
UN4212TA
UN4214TA
UN4215TA
2SD2037EFTA
B C E
2SB1238QSTV6
2SD1862QRTV6
B C E
PT381
Cathode
Anode
Ca
A
2SB709S
C
B
E
Ca
Cathode
A
Anode
MA4051MTA
MA4062MTA
MA4068HTA
MA4091MTA
MA4056MTA
MA4100MTA
MA4270MTA
Ca
Cathode
A
Anode
RL1N4003N02
Ca
Cathode
A
Anode
MA165TA
1SS291TA
Ca
Cathode
A
Anode
GL380
Anode
Cathode
A
Ca
RCDHC-278N
3 2 1
RSQGP1S53V
A E C
Ca
Ca C
A E
SG-206S
A E C
Ca
Ca C
A E
LN018304P
Anode
Cathode
A
Ca


1
2
3
4
5
A
B
C
D
E
F
G
A SERVO CIRCUIT
⚠ OPTICAL PICKUP
LD
TRACKING COIL
FOCUS COIL
CN701
Q701
2SB709STW
LASER POWER DRIVE
TJ701 (RF)
TJ702 (VREF)
IC701
AN8802SCEIV
SERVO AMP
PLAY
1.2Vp-p
0.5μs 0.2V/DIV.
2ms 0.1V/DIV.
2ms 0.2V/DIV.
IC703
AN8389SEI
FOCUS COIL/TRACKING COIL/
TRAVERSE MOTOR/
SPINDLE MOTOR DRIVE
M702
SPINDLE MOTOR
M701
TRAVERSE MOTOR
2.4V
0V
7.7V
4.9V
F=16.9344MHz


5
6
7
8
9
IC702
MN662 71RA
SERVO PROCESSOR/DIGITAL
SIGNAL PROCESSOR/DIGITAL
FILTER/D/A CONVERTER
R721 100
C730 M0.1
C731 6.3V220
R717 1K
R719 1K
C727 50V1
TP23
C725 K1000P
C726 K1000P
R718 1K
R720 1K
C728 50V1
TP21
TP20
TP18
4.9V
0V
C724 M0.1
C723 10V220
4.8Vp-p
F=16.9344MHz
C722 J27P
X701 (16.9344MHz)
R714 0Ω
C721 J27P
1.1V p-p
F=16.9344MHz
C718 K0.22
R712 220
R711 150K
R709 68K
C744 K8200P
R745 1.5M
C717 M0.1
C732 6.3V220
C733 M0.1
R738 22K
VDD
X2
X1
Vss
SBCK
SUBC
PDO
PCK
EFM
AVss2
AVDD2
VCOF
PLLF
DSLF
DRF
IREF
ARF
WVEL
PLAY
TES
BYTCK
/CLDCK
FCLK
IPFLAG
FLAG
CLVS
CRC
DEMPH
RESY
/RST2
/TEST
AVDD1
OUTL
AVss1
OUTR
RSEL
CSEL
PSEL
MSEL
SSEL
BCLK
LRCK
SRDATA
DVDD1
DVss1
TX
MCLK
MDATA
MLD
SENSE
/FLOCK
/TLOCK
BLKCK
SQCK
SUBQ
DMUTE
STAT
/RST
SMCK
PMCK
LDON
BDO
/RFDET
TRCRS
OFT
VDET
RFENV
TE
FE
TBAL
FBAL
VREF
FOD
TRD
KICK
ECS
ECM
PC
TVD
TRV
PLAY
3.6Vp-p
1kHz, 0dB
PLAY 4.8V 0V
T=13.6ms.
STOP PLAY 4.9V 0V
PLAY 4.8V 0V T=13.6ms.
PLAY 4.8V 0V T=13.6ms.
PLAY 1.2Vp-p 0.5μs. 0.2V/DIV.
4.8V 0V T=13.6ms.
4.8V 0V F=4.2336MHz
PLAY 0.4V p-p 2ms. 0.2V/DIV.
PLAY 0.3V p-p 2ms. 0.1V/DIV.
C745 M0.047
TP22
CN702
L ch OUT
A. GND
R ch OUT
+B (2)
D. GND
LD SW
TX
+B (1)
P. GND
MCLK
M. DATA
MLD
SENSE
/FLOCK
/TLOCK
BLKCK
SQCK
SUBQ
D. MUTE
STAT
/RST
SMCK
REST SW
TP19
TP17
TP15
C743 M0.1
TP14
TP13
TP12
TP11
TP10
TP9
TP8
TP7
TP6
TP5
TP4
TP3
TP2
R743 5.6K
R742 5.6K
R741 5.6K
R730 330
R739 680
C746 D5P
4.9V
----0V
S701 (REST)
TP1
REST=ON
4.9V
0V
TP16
7.7V
----0V
To
CIRC
(CN


11
12
13
14
15
16
17
18
19
20
F LOADING MOTOR CIRCUIT
M551 (LOADING MOTOR)
D551 SG-206S DISC SENSOR
S551 (OPEN/CLOSE)
CN551
H MAIN CIRCUIT
CN404
To A SERVO CIRCUIT (CN702)
CN301
B TRAY MOTOR CIRCUIT
M501 (TRAY MOTOR)
D502 RSQPIS53V SPEED SENSOR
FC502
G SENSOR CIRCUIT
Direction Select
Amp
Drive
IC501 BA6247N MOTOR DRIVE
CN501
CN403
C POWER SWITCH CIRCUIT
S631 (POWER)
D PHOTO TRANSISTOR CIRCUIT
FC503
Q501 PT381 ROTARY POSITION SENSOR
D501 GL380 ROTARY POSITION SENSOR
FC601
E OPERATION CIRCUIT
IC601 RCDHC-278N REMOTE CONTROL SENSOR
IC601
D606 LN01304P (STANDBY)
FL601 (RSL0170-F)
FL DISPLAY
CN601
CN401
CN602
CN402
S607 (■)
S610 (DISC1)
S611 (DISC2)
S612 (DISC3)
S613 (DISC4)
S614 (DISC5)
S608 (▮▮)
S620 (SKIP ▶▶I)
S618 (SEARCH ▶▶)
S616 (PROGRAM MODE)
S621 (▲ OPEN/CLOSE)
S609 (◀)
S619 (SKIP I◀◀)
S617 (SEARCH ◀◀)
S601 (TIME MODE)
S662 (0)
S654 (4)
S658 (8)
S603 (RANDOM MODE)
S602 (SPIRAL)
S651 (1)
S655 (5)
S659 (9)
S604 (REPEAT)
S652 (2)
S656 (6)
S660 (10)
S653 (3)
S657 (7)
S661 (> 10)
S615 (DISC SKIP)
Q461 UN4215TA MOTOR CONTROL
Q462 UN4215TA MOTOR CONTROL
D461 MA4068HTA
D462 MA4056MTA
R461
R463 120
For [GC,GN] areas.
120···[E,EB,EG]
270···[GC,GN]
C461 10V47
C462 0.01
R411 4.7K
R412 22K
R462 220
R410 10K
R409 1K
R413 10K
TP1
TP2
TP3
TP6
TP7
TP8
TP9
TP10
IC401 ATT78043B065 SYSTEM CONTROL & FL DRIVE
Q401 2SC3311AIQST RESET
C403 50V1
C404 25V4.7
R414 470
R415 10K
R416 1K
X401 (4.2336MHz)
R407 4.7K
R406 4.7K
R405 4.7K
R404 4.7K
R403 4.7K
R402 4.7K
R401 4.7K
D401 MA165TA
D402 MA165TA
D403 MA165TA
D404 MA165TA
D405 MA165TA
D406 MA165TA
C401 0.01
C402 6.3V470
C405 0.01
C406 50V1
C421 0.01
R421 4.7K
R472 120
R471 10K
Q472 2SC3311AIQST LED DRIVE
Q471 UN4214TA LED DRIVE
D16 RLIN4003NO2
C301 0.01
Z301
C17 6.3V100
C16 10V470
△IC11 LM2940T5M REGULATOR
Q853 UN4112TA MUTING
R852 1K
D852 MA165TA
For [GC] area.
△Q16 2SD2037EFTA REGULATOR
R16
R15
R13
Q15
C15 1000P
C12 16V3300
△D15 MA4091MTA
For [GC] area.
R14
△Q15 2SD2037EFTA REGULATOR
△Q21 2SC3311AIQST REGULATOR
R21
C25 1000P
△D23 MA4100MTA
△D24 MA4100MTA
Q13 UN4 SWIT
R22
C26 1000P
△Q22 2SA1309AIQST REGULATOR
Q32 2SD1450RSTTA FL DRIVE
Q33 2SD FL DR
C801 10V47
R803
R804
C802 10V47
TP4
TP5
PLAY
STOP PLAY
T=13.6ms.
T=4.4ms
T=4.8ms.
T=8ms.
F=4.2336MHz
4.9V
4.8V
4.6V
4.5V
0V
8.6V
-27.2V
10.8V

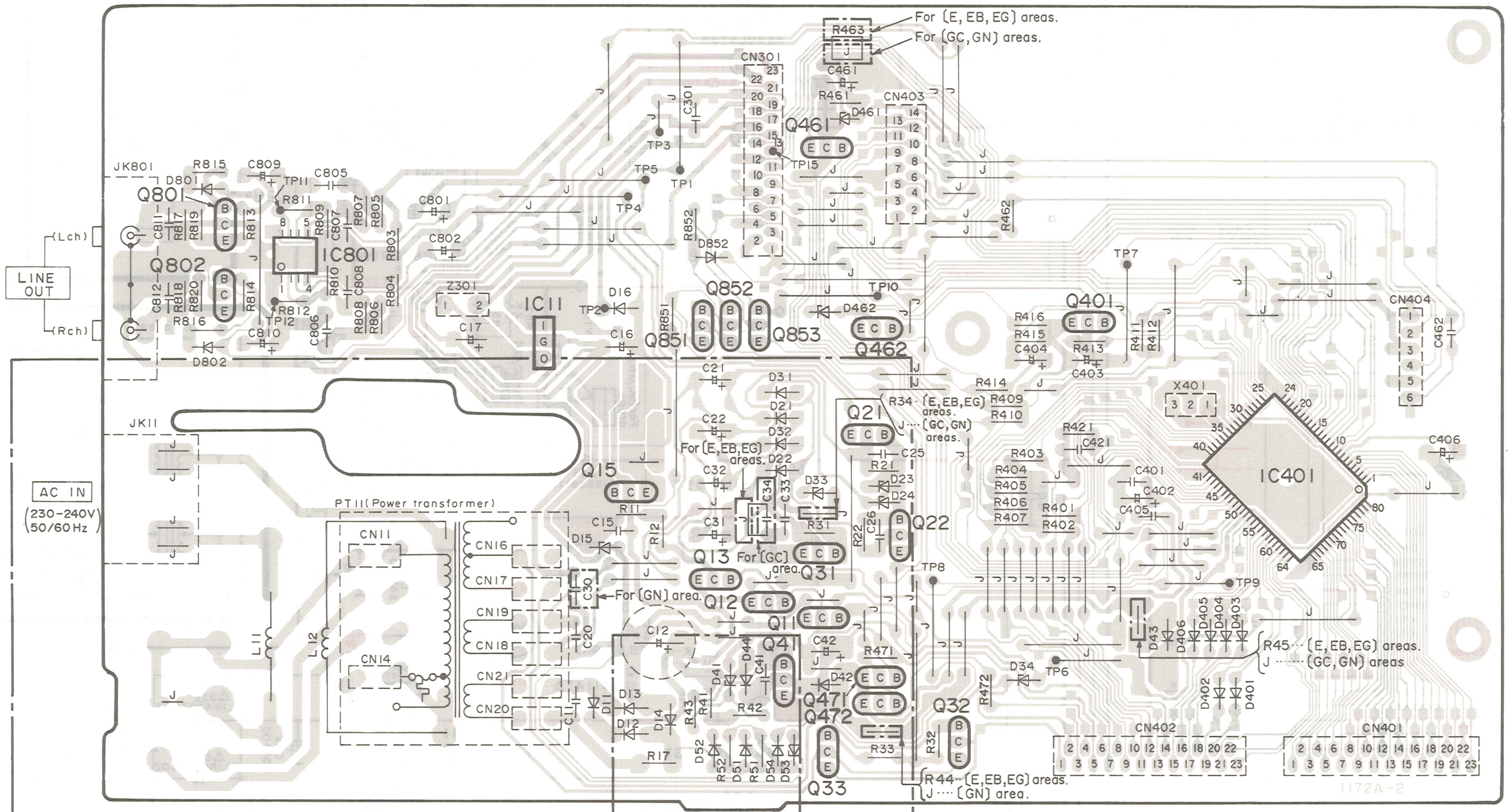

20
21
22
23
24
Q853
UN4112TA
MUTING
4.9V
4.7V (0V)
22K
0V(4.8V)
R852 1K
D852 MA165TA
R851 2.2K
Q852
UN4212TA
MUTING
2.6V (0V)
0V (4.7V)
Q851
UN4112TA
MUTING
2.6V (0V)
2.5V (-1.6V)
For [GC] area.
△Q16
2SD2037EFTA
REGULATOR
R16 1
R15 1
R13 1
8.6V
(8V)
9.3V(8.7V)
△Q15
C15 1000P
C12 16V3300
D11-14
RLIN4003NO2
△D11
△D13
△D12
△D14
C11 0.01
For [GC,GN] areas.
△R17 0.15
For [GC,GN] areas.
D44 RLIN4003NO2
CN21
CN20
CN19
CN18
CN17
CN16
AC 4.6V
AC 11.9V
AC 2.9V
△PT11
CN14
CN11
△L12
△L11
△JK11
△
AC 230-240V (50/60Hz)
For [GC] area.
△D15 MA4091MTA
R14 1
R11
R12
180…[E,EB,EG] [GN]
270…[GC]
RLIN4003NO2 …[E,EB,EG]
MA165TA …[GC,GN]
△D52 MA165TA
△D51 MA165TA
D42
△Q41
2SD1862QRTV6
REGULATOR
6.4V
8V (8.6V)
(5.4V)
7.1V (6.1V)
C41 1000P
R41
220…[E,EB,EG] 470…[GC,GN]
A B C
△Q15
2SD2037EFTA
REGULATOR
C42 6.3V100
R52 1.2K
R51 1.2K
R44 4.7
R45 4.7
For [GC,GN] areas.
For [GC,GN] areas.
R43 220
R42 220
D54 MA165TA
△D53 MA4051MTA
△D41 MA4062MTA
For [GC,GN] area.
4.6V
D43 1SS291TA
△Q21
2SC3311AIQST
REGULATOR
10.8V (9.4V)
15.5V(13.5V)
R21
C25 1000P
11.6V (10V)
(13.5V) 15.5V
47K 10K
0.1V
(13V)16.3V
Q13
UN4114TA
SWITCHING
△D21 RLIN4003NO2
C21 35V100
C20
0.01…[E,EB,EG,GN] 1000P…[GC]
(13.5V) 15.5V
0.1V
16V (13.3V)
(4.5V) 0V
Q12
UN4114TA
SWITCHING
△D23 MA4100MTA
△D24 MA4100MTA
1.2K…[E,EB,EG,GN]
1.8K…[GC]
(-10V) -11.4V
-10.2V (-9.6V)
R22
C26 1000P
-16.6V (-14.4V)
△Q22
2SA1309AIQST
REGULATOR
Q11
UN4214TA
SWITCHING
△D22 RLIN4003NO2
C22 35V100
C31 63V47
△D31 RLIN4003NO2
C32 63V47
△D32 RLIN4003NO2
For [GC] area.
C34 1000P
Q32
2SD1450RSTTA
FL DRIVE
-19.8V
R32 10K
-20.8V (-18.7V)
-20.8V (-18.6V)
-19.8V
R33 10K
-10.8V
B
A
C
C33 1000P
R31 12K
R34 100
-40.6V (-37V)
-33.4V (-27.8V)
△Q31
2SB1238QSTV6
REGULATOR
For [GC] [GN] areas.
△D34 MA4091MTA
-27.2V
△D33 MA4270MTA
Q33
2SD1450RSTTA
FL DRIVE
For [GC] area.
△PT11
CN14
△L12
△JK11
△
AC 110/127/220/240V (50/60Hz)
△S11 (VOLT ADJ.)
CN13
110V
127V
CN12
220V
CN11
240V
△L11
B
C
A
10.8V
0V
TP4
IC801
XRA4558FTI
L.P. FILTER AMP
C805 390P
C801 10V47
R805 8.2K
R807 12K
10.8V
IC801 (1/2)
0V
5
6
7
8
C809 6.3V47
R813 1K
Q801, 802
2SD1450RSTTA
MUTING
PLAY
6.6V p-p
1kHz, 0dB
R819 10
JK801
L ch
R803 220K
C807 390P
R809 33K
R811 33K
TP11
PLAY
6.8V p-p
1kHz, 0dB
D801 MA165TA
R815 1K
0.6V (-1.3V)
Q801
R817 47K
C811 1000P
LINE OUT
R804 220K
C808 390P
R810 33K
R812 33K
TP12
D802 MA165TA
R816 1K
0.6V (-1.3V)
Q802
R818 47K
C812 1000P
R806 8.2K
R808 12K
IC801(1/2)
1
2
3
4
C810 6.3V47
R814 1K
R820 10
R ch
For [GC,GN] areas.
C30 0.01
C802 10V47
C806 390P
-11.4V
0V
-11.4V
TP5

■PRINTED CIRCUIT BOARDS

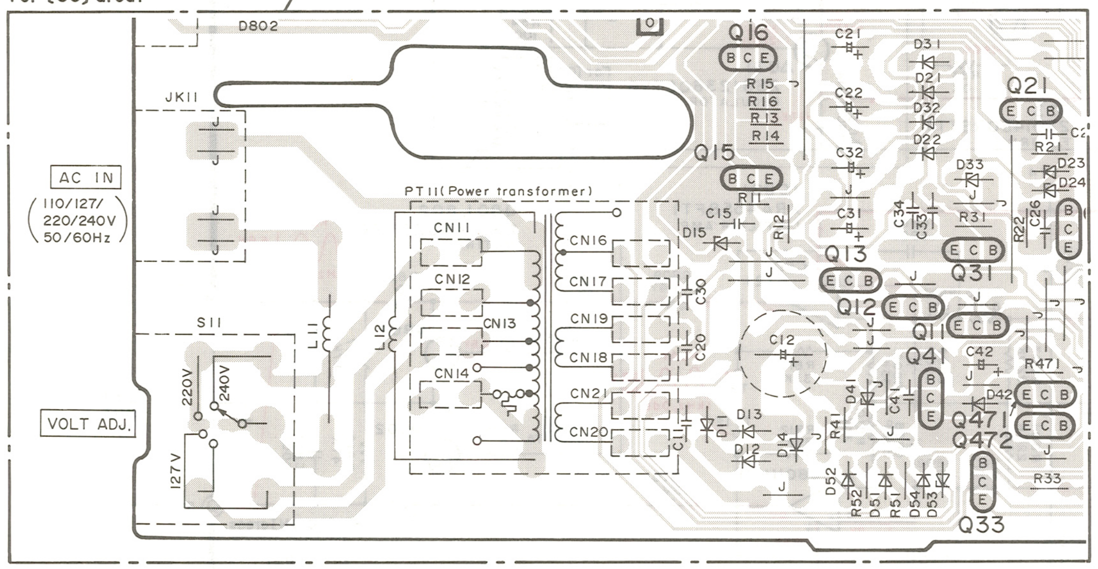
(This printed circuit board diagram may be modified at any time with the development of new technology)

H MAIN P.C.B.

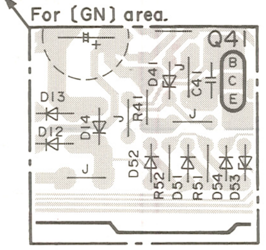
REP1722B-M··· (E, EB, EG)
REP1722C-M··· (GN)
REP1722D-M··· (GC)


For (E, EB, EG) areas.
For (GC, GN) areas.
LINE OUT
Lch
Rch
JK801
Q801
Q802
IC801
IC11
Q851
Q852
Q853
Q461
Q401
Q462
CN301
CN403
CN404
IC401
Q21
Q15
Q13
Q12
Q11
Q31
Q22
Q41
Q471
Q472
Q32
Q33
CN402
CN401
JK11
AC IN
(230-240V 50/60 Hz)
PT11 (Power transformer)
CN11
CN14
CN16
CN17
CN19
CN18
CN21
CN20
R34··· (E, EB, EG) areas.
J ··· (GC, GN) areas.
For (E, EG, EG) areas. D22
For (GC) area
For (GN) area.
R45··· (E, EB, EG) areas.
J ··· (GC, GN) areas
R44··· (E, EB, EG) areas.
J ··· (GN) area.

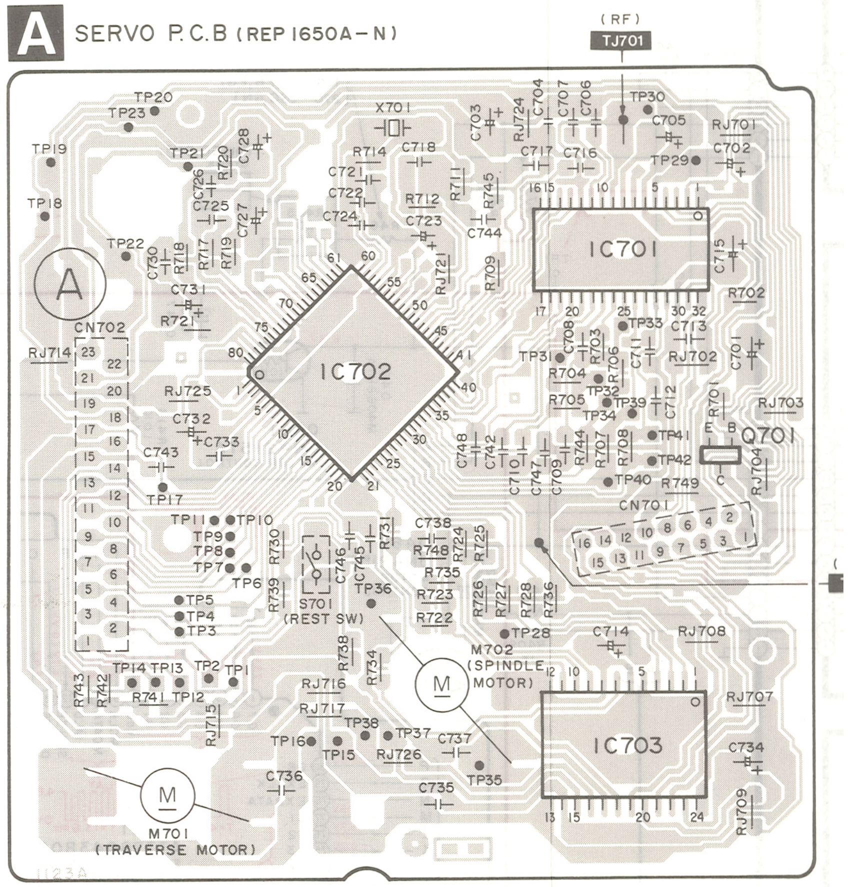
For (GC) area.


D802
JK11
AC IN
110/127/220/240V 50/60Hz
PT11 (Power transformer)
CN11
CN12
CN13
CN14
CN16
CN17
CN19
CN18
CN21
CN20
S11
220V
240V
127V
VOLT ADJ.
Q16
Q15
Q13
Q12
Q11
Q21
Q31
Q41
Q471
Q472
Q33

For (GN) area.

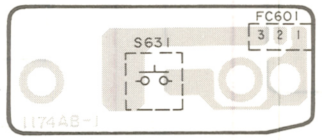

Q41
D13
D12
D14
D41
R41
C41
D52

A SERVO P.C.B (REP1650A-N)

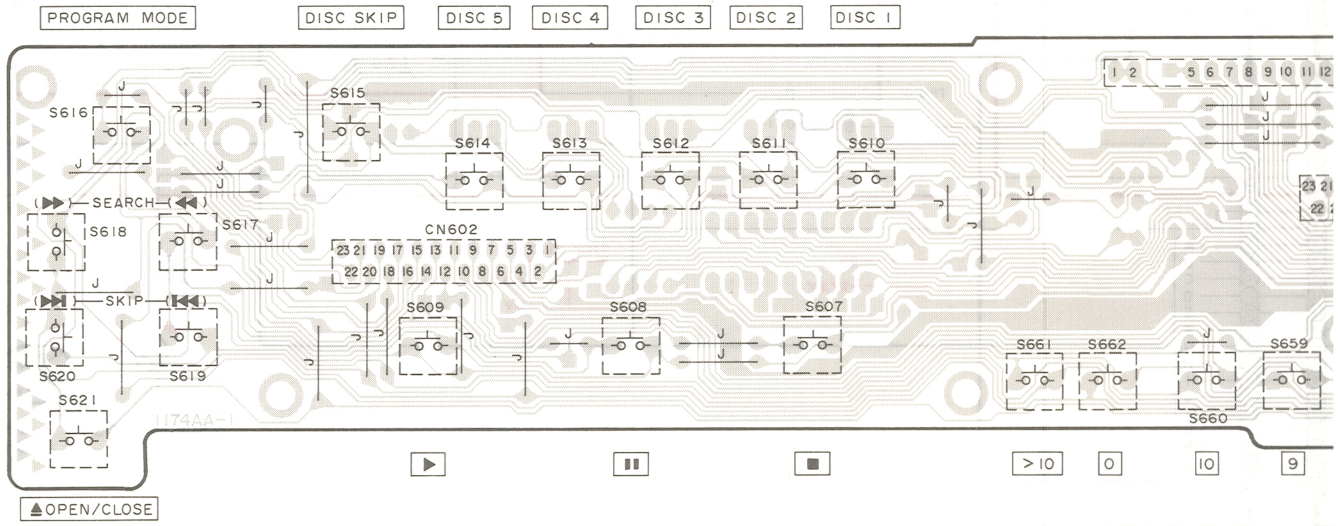

(RF)
TJ701
X701
IC701
IC702
IC703
Q701
CN701
CN702
S701 (REST SW)
M702 (SPINDLE MOTOR)
M701 (TRAVERSE MOTOR)

C POWER SWITCH P.C.B. (REP1723C-S)

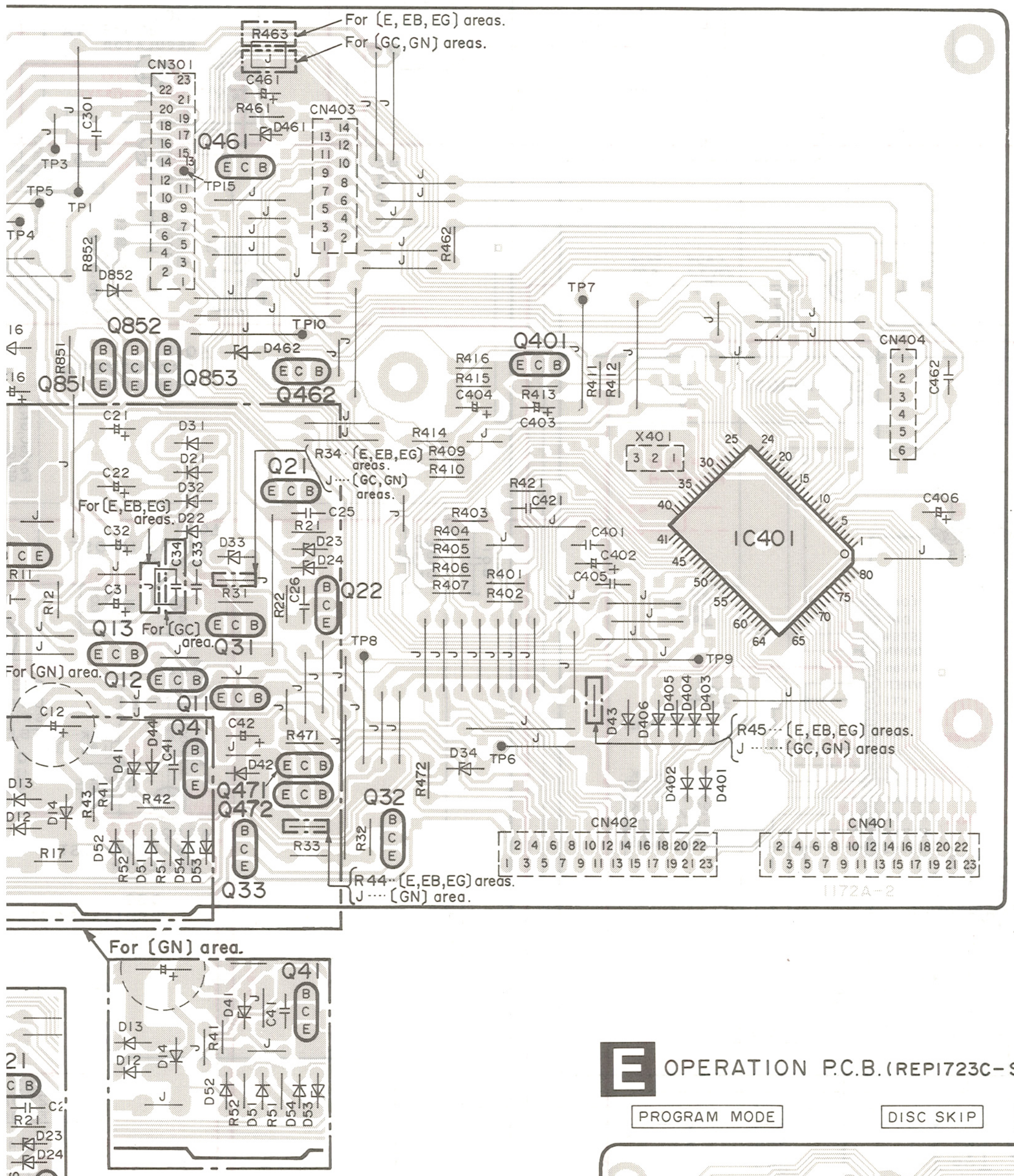
POWER



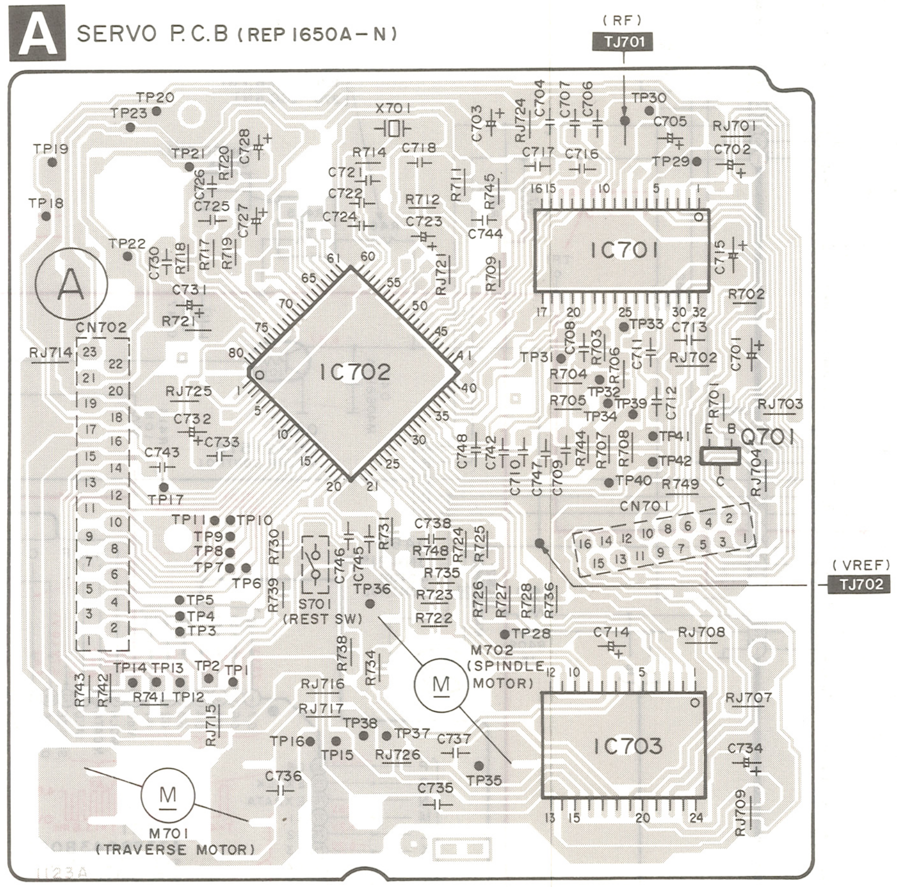
E OPERATION P.C.B. (REP1723C-S)


PROGRAM MODE
DISC SKIP
DISC 5
DISC 4
DISC 3
DISC 2
DISC 1
S616
S615
S614
S613
S612
S611
S610
SEARCH
S618
S617
CN602
SKIP
S609
S608
S607
S620
S619
S621
S661
S662
S660
S659
>10
0
10
9
OPEN/CLOSE

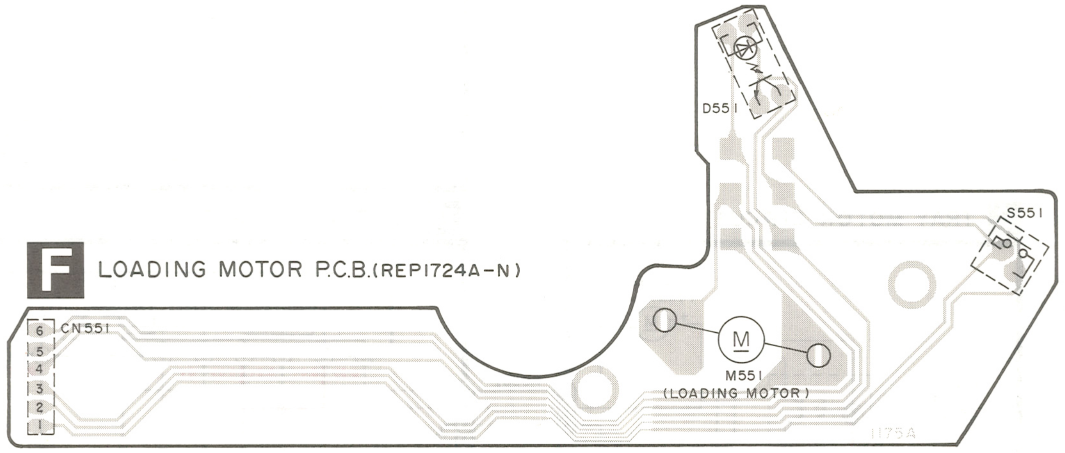
nt of new technology)


For (E, EB, EG) areas.
For (GC, GN) areas.
R463
CN301
CN403
Q461
Q852
Q851
Q853
Q401
Q462
Q21
IC401
CN404
CN402
CN401
X401
Q22
Q13
Q31
Q12
Q1
Q41
Q471
Q472
Q32
Q33
R34 (E, EB, EG) areas. J (GC, GN) areas.
R45 (E, EB, EG) areas. J (GC, GN) areas
R44 (E, EB, EG) areas. J (GN) area.
For (GN) area.
Q41

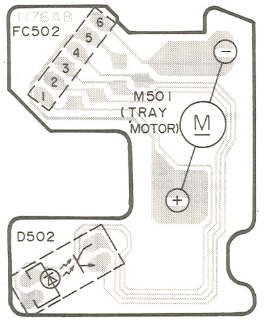
A SERVO P.C.B (REP1650A–N)


(RF)
TJ701
(VREF)
TJ702
IC701
IC702
IC703
CN702
CN701
X701
Q701
S701 (REST SW)
M702 (SPINDLE MOTOR)
M701 (TRAVERSE MOTOR)

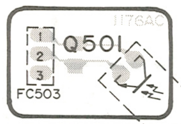
F LOADING MOTOR P.C.B. (REP1724A–N)


D551
S551
CN551
M551 (LOADING MOTOR)

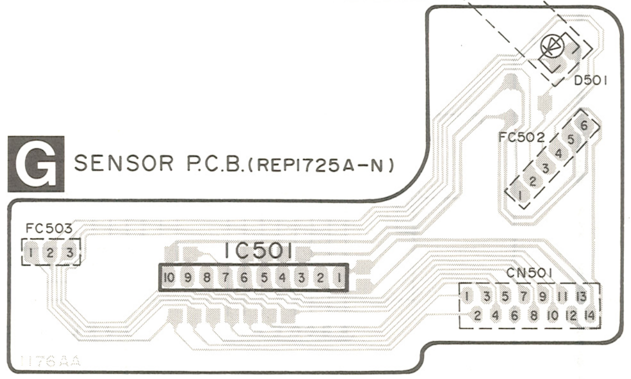
B TRAY MOTOR P.C.B. (REP1725A–N)


FC502
M501 (TRAY MOTOR)
D502

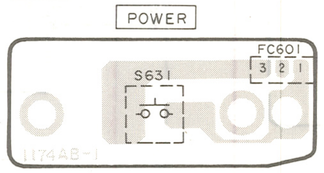
D PHOTO TRANSISTOR P.C.B. (REP1725A–N)



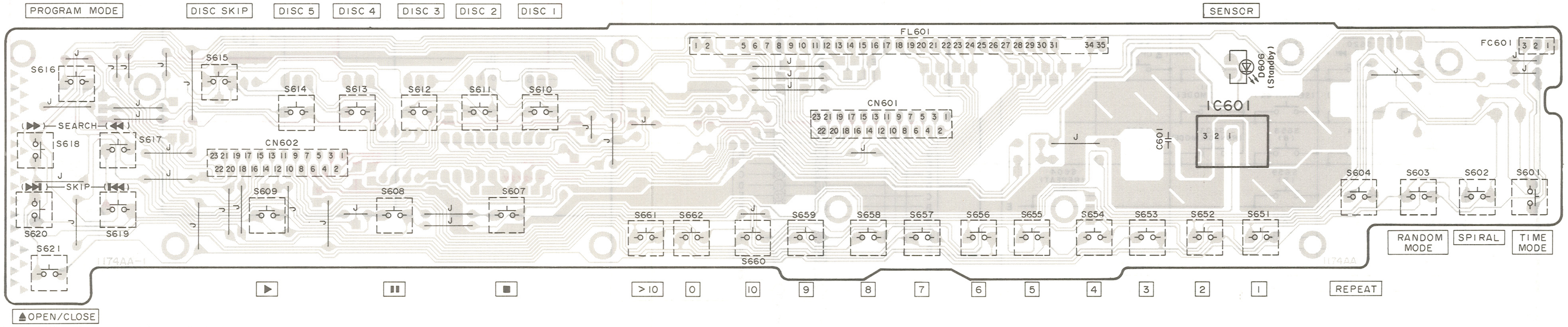
G SENSOR P.C.B. (REP1725A–N)


D501
FC502
FC503
IC501
CN501

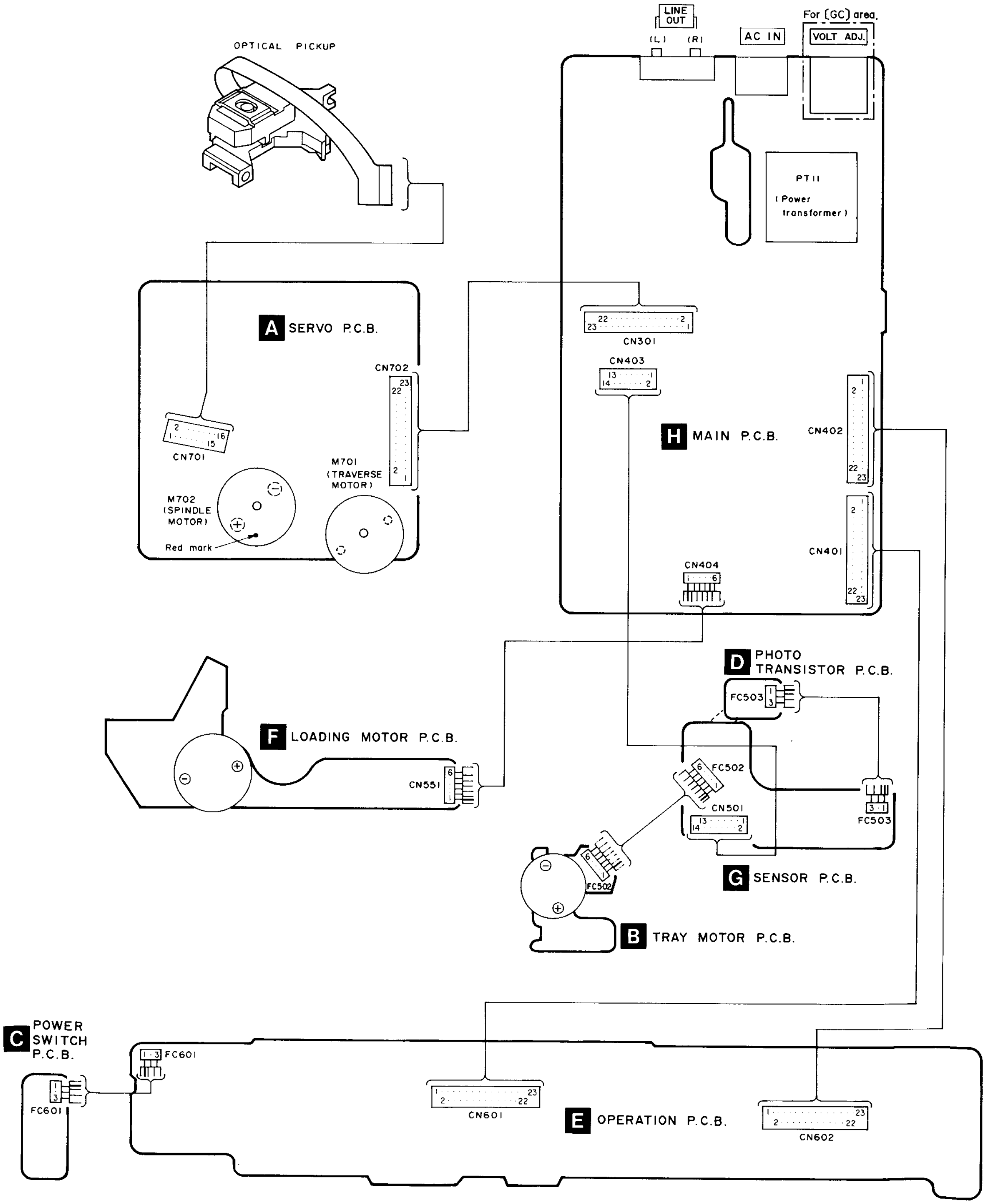
C POWER SWITCH P.C.B.
(REP1723C–S)


POWER
S631
FC601

E OPERATION P.C.B. (REP1723C–S)


PROGRAM MODE
DISC SKIP
DISC 5
DISC 4
DISC 3
DISC 2
DISC 1
SENSOR
FL601
FC601
D606 (Standby)
IC601
CN601
CN602
SEARCH
SKIP
S601 S602 S603 S604 S607 S608 S609 S610 S611 S612 S613 S614 S615 S616 S617 S618 S619 S620 S621
S651 S652 S653 S654 S655 S656 S657 S658 S659 S660 S661 S662
RANDOM MODE
SPIRAL
TIME MODE
>10
0
10
9
8
7
6
5
4
3
2
1
REPEAT
OPEN/CLOSE

WIRING CONNECTION DIAGRAM


LINE OUT
(L)
(R)
AC IN
For (GC) area.
VOLT ADJ.
OPTICAL PICKUP
PT11
(Power transformer)
A SERVO P.C.B.
CN702
23
22
2
1
CN701
2
1
16
15
M701
(TRAVERSE MOTOR)
M702
(SPINDLE MOTOR)
Red mark
22
2
23
1
CN301
CN403
13
1
14
2
H MAIN P.C.B.
CN402
CN401
CN404
1
6
D PHOTO TRANSISTOR P.C.B.
FC503
F LOADING MOTOR P.C.B.
CN551
FC502
CN501
FC503
G SENSOR P.C.B.
FC502
B TRAY MOTOR P.C.B.
C POWER SWITCH P.C.B.
FC601
FC601
CN601
E OPERATION P.C.B.
CN602

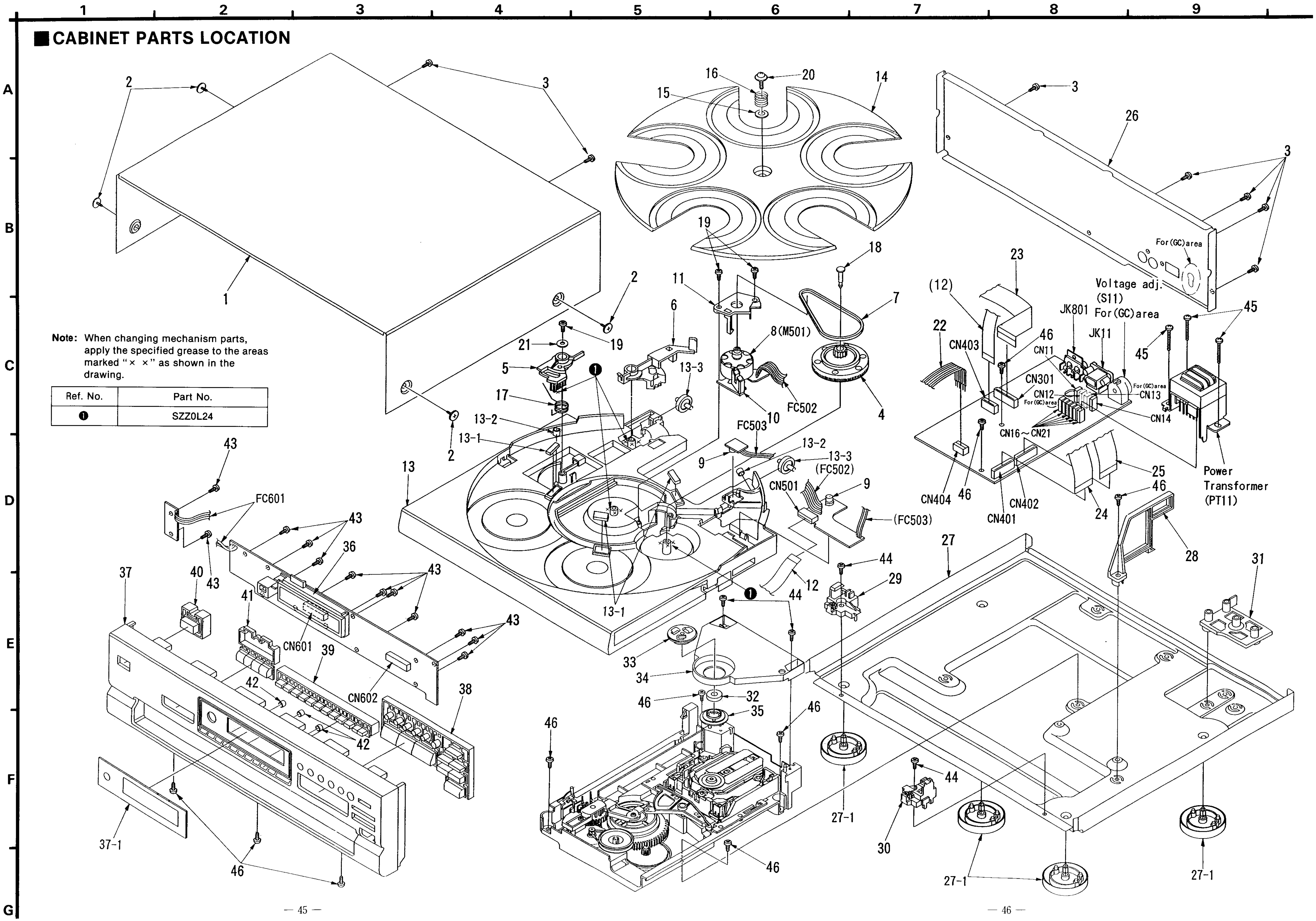
REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RKM0193-K	CABINET	
2	SNE2129-3	SCREW	
3	XTBS3+8JFZ1	SCREW	
4	RDG0267	REDUCTION GEAR	
5	RDG0268	CLOSE LOCK GEAR	
6	RDG0269	OPEN LOCK GEAR	
7	RDV0031	BELT	
8	RFKPLPD667PA	TRAY MOTOR(M501) ASS'Y	
9	RMN0254	LED HOLDER(D501, Q501)	
10	RMN0255	SENSOR HOLDER(D502)	
11	RMN0263	MOTOR HOLDER	
12	REZ0648	FPC BOARD(14P)	
13	RFKNLPD667PA	TRAY ASS'Y	
13-1	RMF0182	TRAY FELT	
13-2	RMG0200	SILENT RUBBER	
13-3	RMR0546-W	TRAY ROLLER	
14	RGT0019	ROTARY TRAY	
15	RHW81001-1	WASHER	
16	RMB0365	SPRING	
17	RME0152	LOCK GEAR SPRING	
18	RMS0123-1	RIVET	
19	XTB3+10G	SCREW	
20	XTWS3+10T	SCREW	
21	XWE3D13	WASHER	
22	REZ0623	FLAT CABLE(6P)	
23	REZ0635	FLAT CABLE(23P)	
24	REZ0636	FLAT CABLE(23P)	
25	REZ0637	FPC BOARD(23P)	
26	RFKHLPD667E	REAR PANEL ASS'Y	(E, EG)
26	RFKHLPD667EB	REAR PANEL ASS'Y	(EB, GN)
26	RFKHLPD667GC	REAR PANEL ASS'Y	(GC)
27	RFKJLPD667PK	CHASSIS ASS'Y	
27-1	RKA0053-A	FOOT	
28	RMR0749-W	CABLE HOLDER	
29	RMR0742-K	TRAY BASE GUIDE(L)	
30	RMR0743-K	TRAY BASE GUIDE(R)	
31	RMR0765-W	TRANSFORMER BASE	
32	RHM245ZA	MAGNET	
33	RMR0334	FIXED PLATE	
34	RFKNLPD667E	CLAMP PLATE ASS'Y	(E)
34	RFKNLPD667EB	CLAMP PLATE ASS'Y	(EB, EG, GC, GN)
35	RMR0761-W	CLAMPER	
36	RMN0185-1	FL HOLDER	
37	RFKGLPD667EK	FRONT PANEL ASS'Y	
37-1	RGK0611A-K	FRONT ORNAMENT PLATE	
38	RGU1016-K	MAIN BUTTON	
39	RGU1019-K	10 KEY BUTTON	
40	RGU1015-K	POWER BUTTON	
41	RGU1017-K	SUB BUTTON	
42	RMG0200	STOPPER TUBE	
43	XTB26+8J	SCREW	
44	XTB3+10JFZ	SCREW	
45	XTB3+20J	SCREW	
46	XTB3+8JFZ	SCREW	
		LOADING MECHANISM	
101	RDG0270	REDUCTION GEAR	
102	RDG0271	DRIVE GEAR(1)	
103	RDG0272	DRIVE GEAR(2)	
104	RDK0025	DRIVE CAM	
105	RDP0050	PULLEY GEAR	
106	RFKPLPD667PB	LOADING MOTOR(M551) ASS'Y	
107	RHD26019	SCREW	
108	RMG0268-K	BELT	
109	RML0334	DRIVE LEVER	
110	RMM0117	SLIDE PLATE(1)	
111	RMM0118	SLIDE PLATE(2)	
112	RMR0746-W	REINFORCING PLATE	
113	RFKNLPD667PB	MECHANISM BASE ASS'Y	
114	RXQ0346	SLIDER ASS'Y	
115	XTB3+10JFZ	SCREW	
116	RAE0113Z	TRAVERSE DECK ASS'Y	
116-1	SHGD112	FLOATING RUBBER(1)	
116-2	SHGD113-1	FLOATING RUBBER(2)	
116-3	XQS17+A35FZ	SCREW	
117	RME0109	FLOATING SPRING(1)	
118	RME0142	FLOATING SPRING(2)	
119	RMR0698-K	TRAVERSE CHASSIS	
120	RMS0123-1	TRAVERSE FIXED PIN(1)	
121	RMS0350	TRAVERSE FIXED PIN(2)	
122	XTV2+6G	SCREW	
123	RMX0094	TRAY HOLDER	

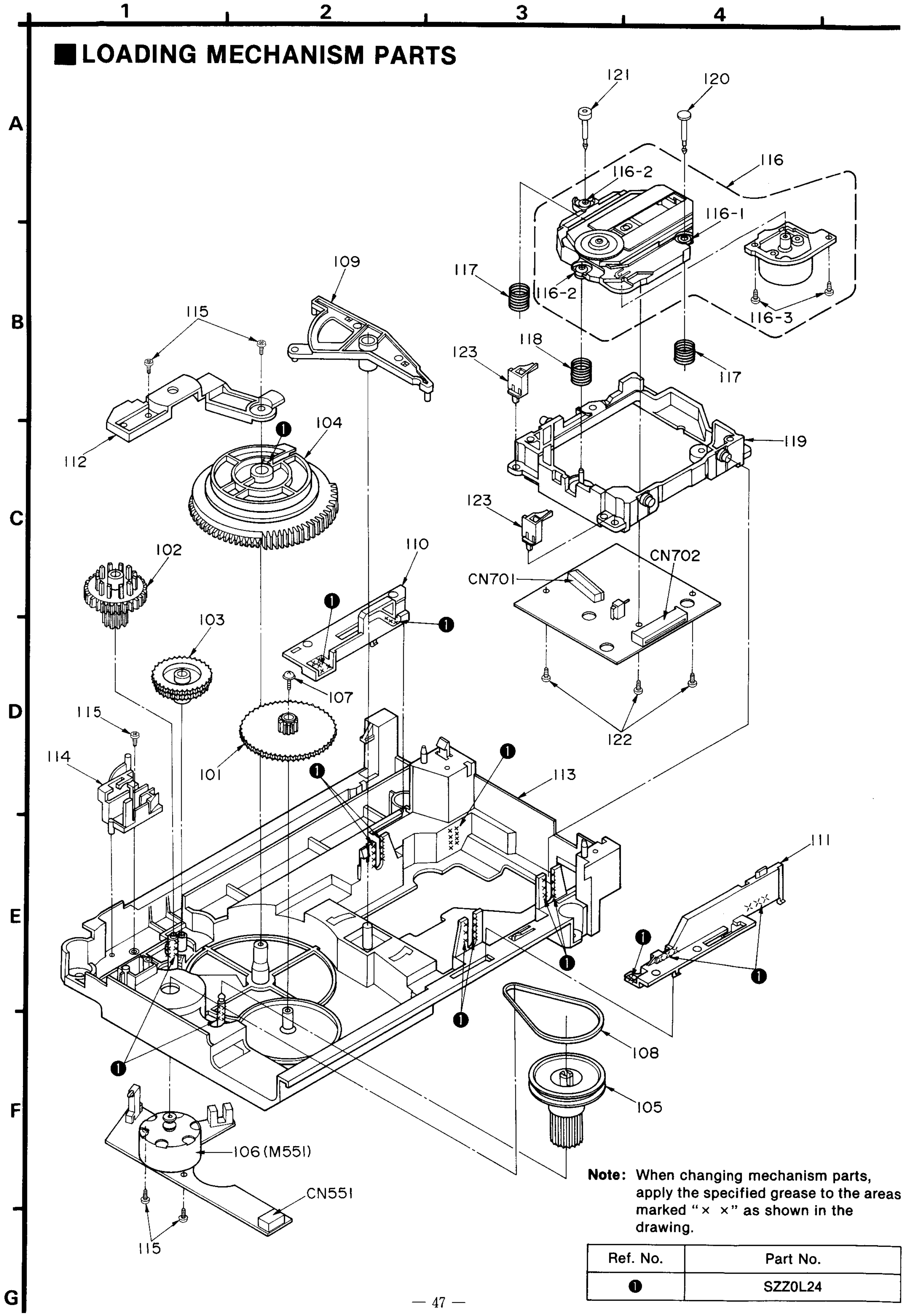
CABINET PARTS LOCATION

Note: When changing mechanism parts, apply the specified grease to the areas marked "× ×" as shown in the drawing.

Ref. No.	Part No.
❶	SZZ0L24


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
2
3
1
2
3
16
20
15
14
26
3
19
18
11
8(M501)
7
6
21
19
5
❶
13-3
17
13-2
13-1
2
FC502
10
4
FC503
13-2
9
13-3
(FC502)
CN501
9
(FC503)
13
12
44
❶
13-1
23
(12)
22
CN403
46
CN11
JK801
Voltage adj.
(S11)
For(GC)area
JK11
For(GC)area
CN301
CN12
For(GC)area
CN13
CN14
CN16～CN21
45
45
Power
Transformer
(PT11)
25
46
24
CN404
46
CN402
CN401
28
27
31
29
44
43
FC601
43
36
37
40
43
43
41
CN601
39
43
CN602
38
42
42
37-1
46
46
33
34
32
35
46
46
46
27-1
44
30
27-1
27-1
27-1
46

■ LOADING MECHANISM PARTS



Note: When changing mechanism parts, apply the specified grease to the areas marked "× ×" as shown in the drawing.

Ref. No.	Part No.
❶	SZZ0L24

■ REPLACEMENT PARTS LIST

Notes: *Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.
*Warning: This product uses a laser diode. Refer to caution statements on page 2.
*ACHTUNG: Die lasereinheit nicht zerlegen.
Die lasereinheit darf nur gegen einc vom hersteller spezifizierte einheit ausgetauscht werden.
*The "(SF)" mark denotes the standard part.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC11	LM2940T5	REGULATOR	⚠
IC401	ATT78043B065	SYSTEM CONTROL&FL DRIVE	
IC501	BA6247N	MOTOR DRIVE	
IC601	RCDHC-278N	REMOTE CONTROL SENSOR	
IC801	XRA4558FT1	L. P. F.	
		TRANSISTOR(S)	
Q11	UN4214TA	TRANSISTOR	
Q12, 13	UN4114TA	TRANSISTOR	
Q15	2SD2037EFTA	TRANSISTOR	⚠
Q16	2SD2037EFTA	TRANSISTOR	(GC)⚠
Q21	2SC3311AIQST	TRANSISTOR	⚠
Q22	2SA1309AIQST	TRANSISTOR	⚠
Q31	2SB1238QSTV6	TRANSISTOR	⚠
Q32, 33	2SD1450RTA	TRANSISTOR	
Q41	2SD1862QRTV6	TRANSISTOR	⚠
Q401	2SC3311AIQST	TRANSISTOR	
Q461, 462	UN4215	TRANSISTOR	
Q471	UN4214TA	TRANSISTOR	
Q472	2SC3311AIQST	TRANSISTOR	
Q501	PT381TB	TRANSISTOR	
Q801, 802	2SD1450RTA	TRANSISTOR	
Q851	UN4112	TRANSISTOR	
Q852	UN4212TA	TRANSISTOR	
Q853	UN4112	TRANSISTOR	
		DIODE(S)	
D11-14	RL1N4003N02	DIODE	⚠
D15	MA4091-M	DIODE	⚠
D16	RL1N4003N02	DIODE	
D21, 22	RL1N4003N02	DIODE	⚠
D23, 24	MA4100MTA	DIODE	⚠
D31, 32	RL1N4003N02	DIODE	⚠
D33	MA4270	DIODE	⚠
D34	MA4091-M	DIODE	⚠
D41	MA4062MTA	DIODE	
D42	RL1N4003N02	DIODE	(E, EB, EG)
D42	MA165	DIODE	(GC, GN)
D43	1SS291TA	DIODE	
D44	RL1N4003N02	DIODE	(E, EB, EG)

Ref. No.	Part No.	Part Name & Description	Remarks
D51, 52	MA165	DIODE	⚠
D53	MA4051MTA	DIODE	
D54	MA165	DIODE	
D401-406	MA165	DIODE	
D461	MA4068HTA	DIODE	
D462	MA4056MTA	DIODE	
D501	GL380TB	L. E. D.	
D502	RSQGP1S53V	DIODE	
D551	SG-206S	DIODE	
D606	LN018304P	L. E. D.	
D801, 802	MA165	DIODE	
D852	MA165	DIODE	
		COIL(S)	
L11, 12	RLQX400MT-D	COIL	⚠
		TRANSFORMER(S)	
PT11	RTP1K4B017-X	POWER TRANSFORMER	(E, EB, EG, GN)⚠
PT11	RTP1K4E025-X	POWER TRANSFORMER	(GC)⚠
		COMPONENT COMBINATION(S)	
Z301	BL02RN2R65T2	COMBINATION PART	
		OSCILLATOR(S)	
X401	RSXY4M23M01T	OSCILLATOR(4.2336MHz)	
		DISPLAY TUBE(S)	
FL601	RSL0170-F	DISPLAY TUBE	
		SWITCH(ES)	
S11	RSR4A003S-H	VOLTAGE ADJ.	(GC)⚠
S551	RSH1A005	OPEN/CLOSE DETECTOR	
S601	EVQ21405R	TIME MODE	
S602	EVQ21405R	SPIRAL	
S603	EVQ21405R	RANDOM MODE	
S604	EVQ21405R	REPEAT	
S607	EVQ21405R	STOP	
S608	EVQ21405R	PAUSE	
S609	EVQ21405R	PLAY	

Ref. No.	Part No.	Part Name & Description	Remarks
S610	EVQ21405R	DISC 1	
S611	EVQ21405R	DISC 2	
S612	EVQ21405R	DISC 3	
S613	EVQ21405R	DISC 4	
S614	EVQ21405R	DISC 5	
S615	EVQ21405R	DISC SKIP	
S616	EVQ21405R	PROGRAM MODE	
S617	EVQ21405R	R. SEARCH	
S618	EVQ21405R	F. SEARCH	
S619	EVQ21405R	R. SKIP	
S620	EVQ21405R	F. SKIP	
S621	EVQ21405R	OPEN/CLOSE	
S631	EVQ21405R	POWER	
S651	EVQ21405R	NUMERIC 1	
S652	EVQ21405R	NUMERIC 2	
S653	EVQ21405R	NUMERIC 3	
S654	EVQ21405R	NUMERIC 4	
S655	EVQ21405R	NUMERIC 5	
S656	EVQ21405R	NUMERIC 6	
S657	EVQ21405R	NUMERIC 7	
S658	EVQ21405R	NUMERIC 8	
S659	EVQ21405R	NUMERIC 9	
S660	EVQ21405R	NUMERIC 10	
S661	EVQ21405R	NUMERIC >10	
S662	EVQ21405R	NUMERIC 0	
		CONNECTOR(S) AND SOCKET(S)	
CN11	RJS1A1101T1	CONNECTOR(1P)	
CN12, 13	RJS1A1101T1	CONNECTOR(1P)	(GC)
CN14	RJS1A1101T1	CONNECTOR(1P)	
CN16-21	RJS1A1101T1	CONNECTOR(1P)	
CN301	RJS1A6823	CONNECTOR(23P)	
CN401, 402	RJS1A6823	CONNECTOR(23P)	
CN403	RJS1A6814	CONNECTOR(14P)	
CN404	RJS1A6606	CONNECTOR(6P)	
CN501	RJS1A6714	CONNECTOR(14P)	
CN551	RJS2A1506	CONNECTOR(6P)	
CN601, 602	RJS1A6223-1	CONNECTOR(23P)	
		JACK(S)	
JK11	SJS9236	AC INLET	(E, EB, EG, GC) ⚠
JK11	SJSD16	AC INLET	(GN) ⚠
JK801	RJH3201N	LINE OUT	
		FLAT CABLE(S)	
FC502	REZ0612	FLAT CABLE(6P)	
FC503	REZ0613	FLAT CABLE(3P)	
FC601	REZ0610	FLAT CABLE(3P)	

Ref. No.	Part No.	Part Name & Description	Remarks
		<SERVO P.C.B.>	
		INTEGRATED CIRCUIT(S)	
IC701	AN8802SCE1V	SERVO AMP	
IC702	MN66271RA	SERVO PROCESSOR	
IC703	AN8389SE1	MOTOR DRIVE	
		TRANSISTOR(S)	
Q701	2SB709S	TRANSISTOR	
		OSCILLATOR(S)	
X701	RSXZ16M9M02T	OSCILLATOR(16.9344MHz)	
		SWITCH(ES)	
S701	RSM0006-P	REST DETECTOR	
		CONNECTOR(S) AND SOCKET(S)	
CN701	RJU035T016-1	SOCKET(16P)	
CN702	RJS1A6723-1Q	CONNECTOR(23P)	
		PACKING MATERIAL	
P1	RPG1993	PACKING CASE	(E, EG, GC)
P1	RPG1992	PACKING CASE	(EB)
P1	RPG1996	PACKING CASE	(GN)
P2	RPN0760	CUSHION	(E, EG, GC)
P2	RPN0772	CUSHION	(EB, GN)
P3	XZB60X65A01Z	PROTECTION BAG(UNIT)	
		ACCESSORIES	
A1	RFKSLPD667E	INSTRUCTION MANUAL ASS'Y	(E)
A1	RQT2321-B	INSTRUCTION MANUAL	(EB, GN)
A1	RQT2432-D	INSTRUCTION MANUAL	(EG)
A1	RFKSLPD667GC	INSTRUCTION MANUAL ASS'Y	(GC)
A2	RQA0013	WARRANTY CARD	(E, EB, EG)
A2	RQX7433ZA	WARRANTY CARD	(GN)
A3	RQCB0169	SERVICENTER LIST	
A4	RJA0019-2K	AC POWER SUPPLY CORD	(E, EG, GC) ⚠ (SF)
A4	VJA0733	AC POWER SUPPLY CORD	(EB) ⚠ (SF)
A4	RJA0036-K	AC POWER SUPPLY CORD	(GN) ⚠ (SF)
A5	SJP2249-3	STEREO CONNECTION CABLE	
A6	RQLA0134	VOLTAGE CAUTION LABEL	(GC)
A7	SJP5213-1	POWER PLUG ADAPTOR	(GC) ⚠

RESISTORS AND CAPACITORS

Notes : * Capacity values are in microfarads (uF) unless specified otherwise, P = Pico-farads (pF) F = Farads (F)
* Resistance values are in ohms, unless specified otherwise, 1 K = 1,000 (OHM), 1 M = 1,000k (OHM)

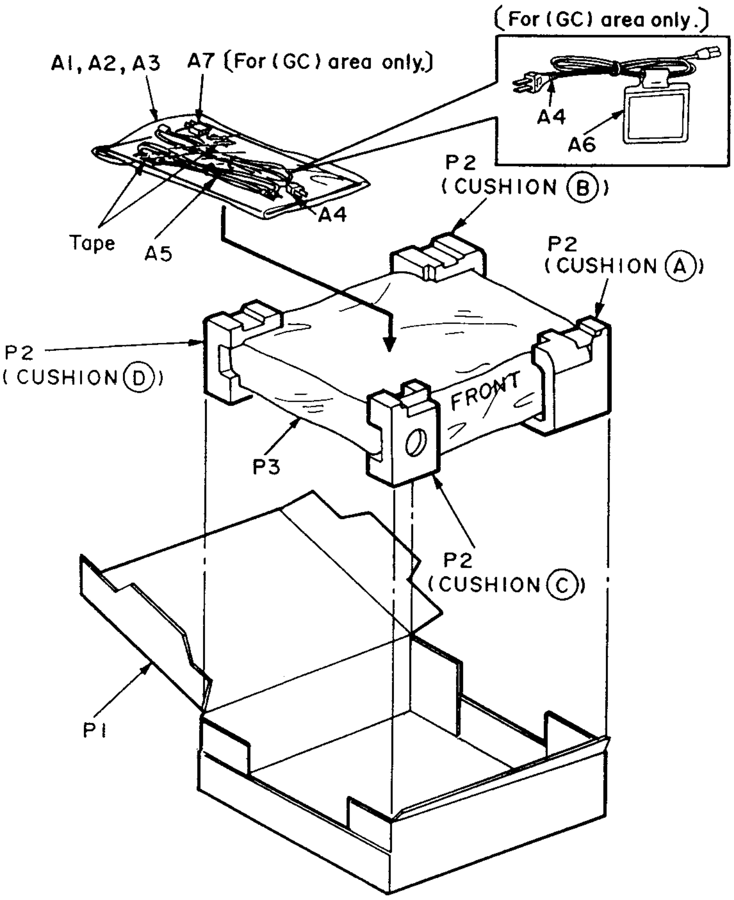
Ref. No.	Part No.	Values & Remarks
		RESISTORS
R11, 12	ERDS2TJ181T	1/4W 180 E, EB, EG, GN
R11, 12	ERDS2TJ271	1/4W 270 GC
R13-16	ERDS2TJ1R0	1/4W 1 GC
R17	ERQ16NKWR15E	1W 0.15 E, EB, EG ⚠
R21, 22	ERDS2TJ122	1/4W 1.2K E, EB, EG, GN
R21, 22	ERDS2TJ182	1/4W 1.8K GC
R31	ERDS2TJ123	1/4W 12K
R32, 33	ERDS2TJ103	1/4W 10K
R34	ERDS2TJ101	1/4W 100 E, EB, EG
R41	ERDS2TJ471	1/4W 470 GC, GN
R41-43	ERDS2TJ221	1/4W 220 E, EB, EG
R44, 45	ERDS2TJ4R7T	1/4W 4.7 E, EB, EG
R51, 52	ERDS2TJ122	1/4W 1.2K
R401-407	ERDS2TJ472	1/4W 4.7K
R409	ERDS2TJ102	1/4W 1K
R410	ERDS2TJ103	1/4W 10K
R411	ERDS2TJ472	1/4W 4.7K
R412	ERDS2TJ223	1/4W 22K
R413	ERDS2TJ103	1/4W 10K
R414	ERDS2TJ471	1/4W 470
R415	ERDS2TJ103	1/4W 10K
R416	ERDS2TJ102	1/4W 1K
R421	ERDS2TJ472	1/4W 4.7K
R461	ERDS2EJ121	1/4W 120 E, EB, EG
R461	ERDS2TJ271	1/4W 270 GC, GN
R462	ERDS2TJ221	1/4W 220
R463	ERDS2EJ121	1/4W 120 E, EB, EG
R471	ERDS2TJ103	1/4W 10K
R472	ERDS2EJ121	1/4W 120
R803, 804	ERDS2TJ224T	1/4W 220K
R805, 806	ERDS2TJ822	1/4W 8.2K
R807, 808	ERDS2TJ123	1/4W 12K
R809-812	ERDS2TJ333	1/4W 33K
R813-816	ERDS2TJ102	1/4W 1K
R817, 818	ERDS2TJ473	1/4W 47K
R819, 820	ERDS2TJ100	1/4W 10
R851	ERDS2TJ222	1/4W 2.2K
R852	ERDS2TJ102	1/4W 1K
		CAPACITORS
C11	ECBT1E103ZF	25V 0.01U
C12	ECEA1CU332B	16V 3300U ⚠
C15	ECBT1H102KB5	50V 1000P
C16	ECA1AM471B	10V 470U
C17	ECEA0JKA101B	6.3V 100U

Ref. No.	Part No.	Values & Remarks
C20	ECBT1E103ZF	25V 0.01U E, EB, EG, GN
C20	ECBT1H102KB5	50V 1000P GC
C21, 22	ECA1VM101B	35V 100U
C25, 26	ECBT1H102KB5	50V 1000P
C30	ECBT1E103ZF	25V 0.01U GC, GN
C31, 32	ECA1JM470B	63V 47U
C33	ECBT1H102KB5	50V 1000P
C34	ECBT1H102KB5	50V 1000P GC
C41	ECBT1H102KB5	50V 1000P
C42	ECEA0JKA101B	6.3V 100U
C301	ECBT1C103NS5	16V 0.01U
C401	ECBT1C103NS5	16V 0.01U
C402	ECA0JM471B	6.3V 470U
C403	ECEA1HKA010B	50V 1U
C404	ECEA1EKA4R7B	25V 4.7U
C405	ECBT1C103NS5	16V 0.01U
C406	ECEA1HKA010B	50V 1U
C421	ECBT1C103NS5	16V 0.01U
C461	ECEA1AKA470B	10V 47U
C462	ECBT1C103NS5	16V 0.01U
C601	ECFR1E104ZF5	25V 0.1U
C801, 802	ECEA1AKA470B	10V 47U
C805-808	ECCR1H391J5	50V 390P
C809, 810	ECEA0JKA470B	6.3V 47U
C811, 812	ECBT1H102KB5	50V 1000P
		<SERVO P.C.B.>
		RESISTORS
R701	ERJ6GEYJ100	1/10W 10
R702	ERJ6GEYJ471V	1/10W 470
R703	ERJ6GEYJ823	1/10W 82K
R704	ERJ6GEYJ102A	1/10W 1K
R705	ERJ6GEYJ103V	1/10W 10K
R706	ERJ6GEYJ102A	1/10W 1K
R707	ERJ6GEYJ473V	1/10W 47K
R708	ERJ6GEYJ104V	1/10W 100K
R709	ERJ6GEYJ683V	1/10W 68K
R711	ERJ6GEYJ154V	1/10W 150K
R712	ERJ6GEYJ221V	1/10W 220
R717-720	ERJ6GEYJ102A	1/10W 1K
R721	ERJ6GEYJ101V	1/10W 100
R722	ERJ6GEYJ563V	1/10W 56K
R723	ERJ6GEYJ182V	1/10W 1.8K
R724	ERJ6GEYJ333V	1/10W 33K
R725	ERJ6GEYJ472V	1/10W 4.7K
R726	ERJ6GEYJ473V	1/10W 47K
R727	ERJ6GEYJ103V	1/10W 10K
R728	ERJ6GEYJ392V	1/10W 3.9K

Ref. No.	Part No.	Values & Remarks
R730	ERJ6GEYJ331V	1/10W 330
R731	ERJ6GEYJ392V	1/10W 3.9K
R734-736	ERJ6GEYJ101V	1/10W 100
R738	ERJ6GEYJ223V	1/10W 22K
R739	ERJ6GEYJ681V	1/10W 680
R741-743	ERJ6GEYJ562V	1/10W 5.6K
R744	ERJ6GEYJ103V	1/10W 10K
R745	ERJ6GEYJ155V	1/10W 1.5M
R748	ERJ6GEYJ182V	1/10W 1.8K
R749	ERJ8GEYJ103V	1/8W 10K
		CHIP JUMPERS
R714	ERJ6GEY0R00A	CHIP JUMPER
RJ701-704	ERJ8GEY0R00A	CHIP JUMPER
RJ707-709	ERJ8GEY0R00A	CHIP JUMPER
RJ714-717	ERJ8GEY0R00A	CHIP JUMPER
RJ721	ERJ6GEY0R00A	CHIP JUMPER
RJ724-726	ERJ6GEY0R00A	CHIP JUMPER
		CAPACITORS
C701	ECEA0JKA220	6.3V 22U
C702	ECEA1HKA010I	50V 1U
C703	ECEA0JKA101I	6.3V 100U
C704	ECUZ1E104MBN	25V 0.1U
C705	ECEA1HKA010I	50V 1U
C706	ECUE1H101JCN	50V 100P
C707	ECUV1E273KBN	25V 0.027U
C708	ECUE1H472KBN	50V 4700P
C709	ECUE1C473KBN	16V 0.047U
C710	ECUE1H152KBN	50V 1500P
C711, 712	ECUZ1E104MBN	25V 0.1U
C713	ECUV1C104MBM	16V 0.1U
C714	ECEA0JKA101I	6.3V 100U
C715	ECEA0JKA470I	6.3V 47U
C716	ECUE1H561KBN	50V 560P
C717	ECUZ1E104MBN	25V 0.1U
C718	ECUV1C224KBM	16V 0.22U
C721, 722	ECUE1H270JCN	50V 27P
C723	ECEA1AKA221I	10V 220U
C724	ECUV1C104MBM	16V 0.1U
C725, 726	ECUE1H102KBN	50V 1000P
C727, 728	ECEA1HPK010I	50V 1U
C730	ECUZ1E104MBN	25V 0.1U
C731, 732	ECEA0JK221I	6.3V 220U
C733	ECUZ1E104MBN	25V 0.1U
C734	ECEA1AKA221I	10V 220U
C735	ECUZNE104MBN	25V 0.1U

Ref. No.	Part No.	Values & Remarks
C736	ECUZ1E104MBN	25V 0.1U
C737	ECUZNE104MBN	25V 0.1U
C738	ECUV1C154KBN	16V 0.15U
C742	ECUV1E273KBN	25V 0.027U
C743	ECUZ1E104MBN	25V 0.1U
C744	ECUE1E822KBN	25V 8200P
C745	ECUE1C473MBN	16V 0.047U
C746	ECUE1H050DCN	50V 5P
C747	ECUE1H222KBN	50V 2200P
C748	ECUV1H471KBM	50V 470P

PACKAGING


(For (GC) area only.)
A1, A2, A3
A7 (For (GC) area only.)
A4
A6
Tape
A5
A4
P2
(CUSHION Ⓑ)
P2
(CUSHION Ⓐ)
P2
(CUSHION Ⓓ)
FRONT
P3
P2
(CUSHION Ⓒ)
P1

(CUSHION Ⓐ,Ⓑ,Ⓒ,Ⓓ
Part No. RPN0760 : For (E, EG, GC) areas.
Part No. RPN0772 : For (EB, GN) areas.)

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